

# The Far Eastern Review

ENGINEERING + FINANCE + COMMERCE

THE PIONEER IN ITS FIELD

*A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries.*

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George Bronson Rea, *Publisher and Editor*

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GENERAL TIEN CHUNG-YU,  
Chinese Military Governor and Acting Civil  
Governor of Shantung

# The Far Eastern Review

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FINANCE

COMMERCE

VOL. XVII

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## SHANTUNG, 1921

### Actual Conditions in the Leased Territory of Kiaochau

By George Bronson Rea

**E**XACT knowledge of actual conditions in the leased territory of Kiaochau, and in the province of Shantung, is of primary importance to American and European firms engaged in the China trade. Consequently, this issue of THE FAR EASTERN REVIEW is devoted wholly to matters of fact in Shantung.

The writer has made a personal investigation of the most widely discussed Chinese province with the object of seeing conditions as they are and presenting them without fear or favor. The result is embodied in the series of illustrated articles appearing in these pages. Every facility for investigation was furnished willingly and no disposition was disclosed of any desire for special pleading from any quarter whatsoever. As will be seen, many of the facts are both surprising and interesting.

For instance, it is not generally understood that industrial enterprises within the Leased Territory of Kiaochau are favored and assisted by the Ordinance of December 2, 1905, under which machinery, tools, and implements required for manufacturing, industrial and agricultural purposes, are imported free of duty, while articles manufactured within the Territory are exempt from duty except in so far as China is entitled to duty on the raw materials. The Japanese saw the advantage of this ruling, peculiar to Tsingtau, and encouraged the establishment of new industries by providing factory sites at extremely low costs, and by adopting the general principle on the Shantung Railway that raw materials from the interior for factories within the Leased Territory shall be given as low freight rates as is consistent with the profitable working of the line. These advantages are open to all alike.

In a public address on October 1, 1917, at the time of the installation of the civil administration, Dr. M. Akiyama, chief civil administrator, expressed the hope that Americans, Europeans, Chinese and Japanese would unite their endeavors in developing the industries and commerce of Tsingtau, thus

promoting their individual interests and the common good of all friendly nations. Publicly and privately, men at the head of affairs in the Leased Territory have welcomed the enterprise and capital of all friendly nations to assist in the development of the port.

This expresses the fundamental policy of Japan in Kiaochou and, as far as I have been able to learn, Japan has lived up to this policy. There may exist in the secret archives of American and European chancelleries, documents and reports that prove the contrary, but in the main, these have originated from sources outside the Tsingtau district. As far as Americans are concerned, it may be said that the American consulate at Tsingtau remains in blissful ignorance of any specific instance of unfair discrimination against American interests.

#### Actual Origin of Suspicion

Investigation on the ground tends to prove that the many criticisms of Japan's activities in Tsingtau owe their origin to the petty officiousness of subordinate government employees, who either abuse or misuse their authority, or are so rigidly bound by bureaucratic red tape that they have lost the capacity to act for themselves in an emergency and dare not decide any minor question not provided for in their instructions. The foreign merchant who has the energy to rise above these petty obstacles and present his case to some superior official invariably receives prompt and courteous attention. Such method, however, require considerable moral courage, involving as it does, a reprimand to the subordinate from his superior, and thereby engendering a feeling of spite which finds expression in further petty difficulties for the independent foreigner. This is human nature, true to life the world over. Add to this the racial and commercial differences which undoubtedly exist to complicate the situation, and it can be readily understood how minor incidents which pass unnoticed in any other part of the world are



GENERAL M. YUI

The Fourth Military Governor of the Leased Territory of Kiaochau. A Japanese General of the Old School, with Pronounced Liberal Tendencies and Ideas. Under his Administration, the Firm Hand of the Military has been Relaxed, and the Actual Work of Government Carried Out by a Civil Organization. He is Very Pro-Chinese.

here magnified into international questions and made to appear as part of a set policy on the part of the Japanese authorities to discriminate against foreigners. Japan's great trade expansion during the war absorbed many of her best and most promising young men, leaving the civil service to be filled by men not so well equipped with experience in treating with foreigners. Under such conditions, it is only natural that some misunderstandings occurred, and it is to the credit of the higher officials that they are invariably disposed to settle equitably any difficulty that may arise. If the foreign merchant will be willing to exert himself and fight against these conditions by taking his troubles to the proper authorities, he will in time win out and pave the way to a profitable business.

The average foreign merchant in Shanghai and elsewhere takes it for granted that all stories about Japanese discriminatory methods are true to fact, and they are disinclined to enter the commercial struggle by establishing a branch office in Chinese territory under control of Japan. A little of the same nerve and enterprise displayed in opening markets in other places and in fighting local conditions, if applied to Tsingtau and Shantung, would bring success. Despite all the charges of discrimination in favor of Japanese and unfair practices, the leading foreign firm in Tsingtau is capturing the major portion of the business in which it is interested.

Minor incidents have undoubtedly occurred to try the patience of the foreign merchant, but these cannot fairly be made to serve as a blanket indictment against the good faith of the Japanese government. As an example of these occurrences, I was told that a foreign trader in Tsingtau was certain that he had been unfairly treated in the allocation of freight cars to ship his goods from Tsinanfu to the seaport. It appears that a Japanese freight broker at the provincial capital had obtained cars from the railway authorities when he had nothing to ship, and cars were refused the foreigner whose shipments were awaiting transport. The latter was, therefore, compelled to contract for his cars with the Japanese broker and pay a higher rate than the official tariff. This instance was not cited as a general practice, but as an isolated case, yet it is a matter of record that it has been employed as convincing proof that "the railway was discriminating against foreigners in favor of Japanese." Let us assume that it was. Then let us turn to the Chinese-managed Tientsin-Pukow railway which also passes through Tsinanfu, and we find that all freight on this line has to pass through the hands of Chinese forwarding companies or freight brokers, and next let us look at the empty freight cars that clutter the sidings at the provincial capitals and other centres where they are held by the Tuchuns for their own purposes, or are peddled out to shippers at excessive rates. It will also recur at once to our mind that freight and forwarding agencies are considered quite legitimate in

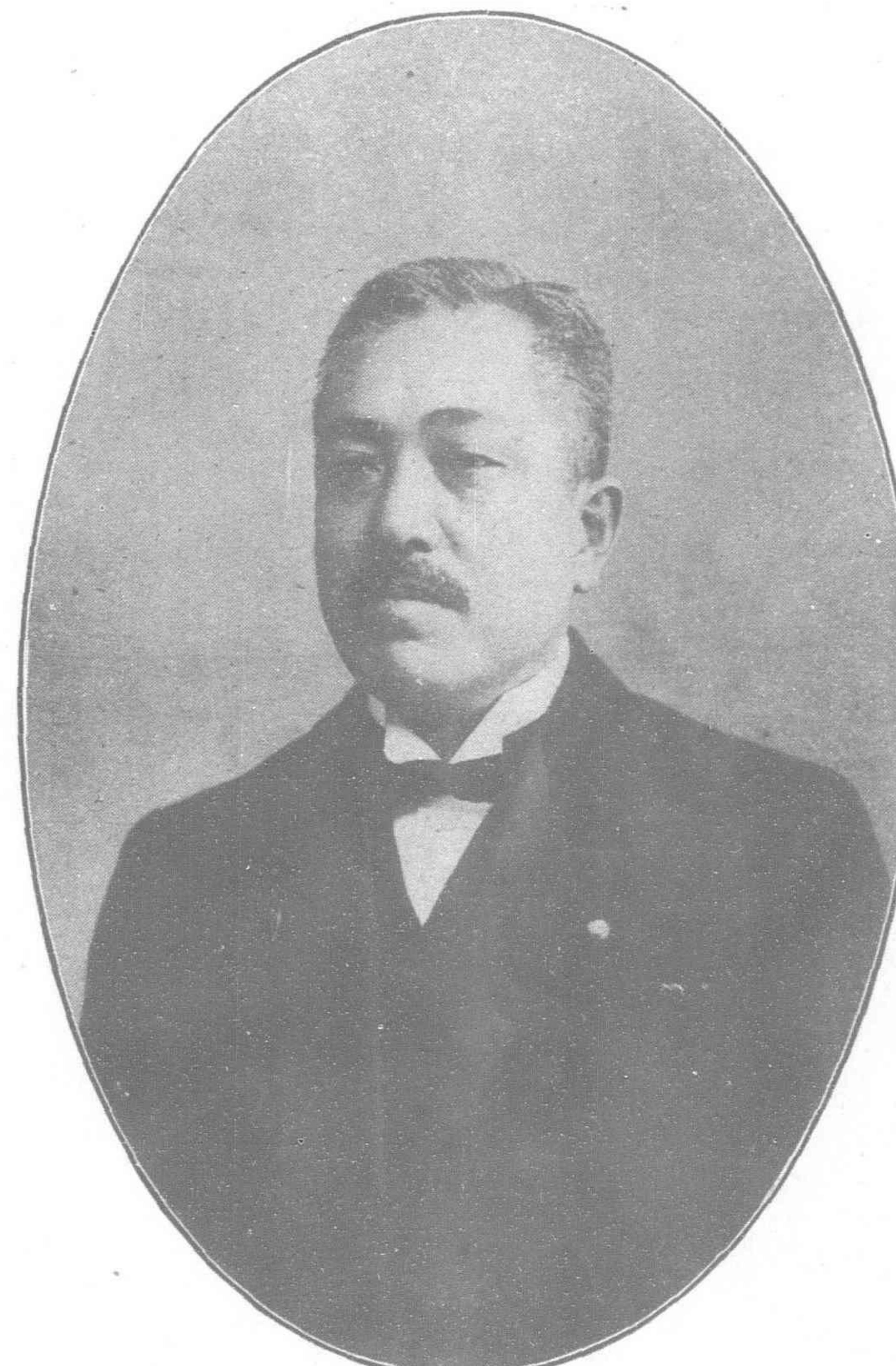
America and elsewhere. It very often occurs that the freight broker will contract for all the cargo space in a steamer when he has absolutely nothing in sight to fill it with, and then run his chances in obtaining shipments. It is also true that it frequently happens that the shipper will have to pay a much higher rate to the broker than he would to the steamship company direct. The system is quite legitimate in America. Yet when an isolated instance crops up in Shantung where a Japanese freight broker is allocated cars at a time when a foreigner has freight to ship over the railway, the incident is cited as conclusive proof of Japanese discrimination. It is not even alleged that such practices are general, or that they occur

at the Tsingtau end of the railway, nor is it said that the incident took place before the installation of the civil administration, one of whose first step was to prohibit the allocation of freight cars to brokers. Whatever may have been the case during the early days of the Japanese military occupation of the railway, conditions at present favor the foreign shipper more than the Japanese. Some foreign firms make a practice of unduly overloading their cars and have escaped payment of excess freight charges in order to avoid any possibility of a misunderstanding. Claims for loss and breakage are met promptly, even to small items of a dollar or less; while if a Japanese shipper oversteps the rules, he has to pay for it.

### The Oil Tanks Incident

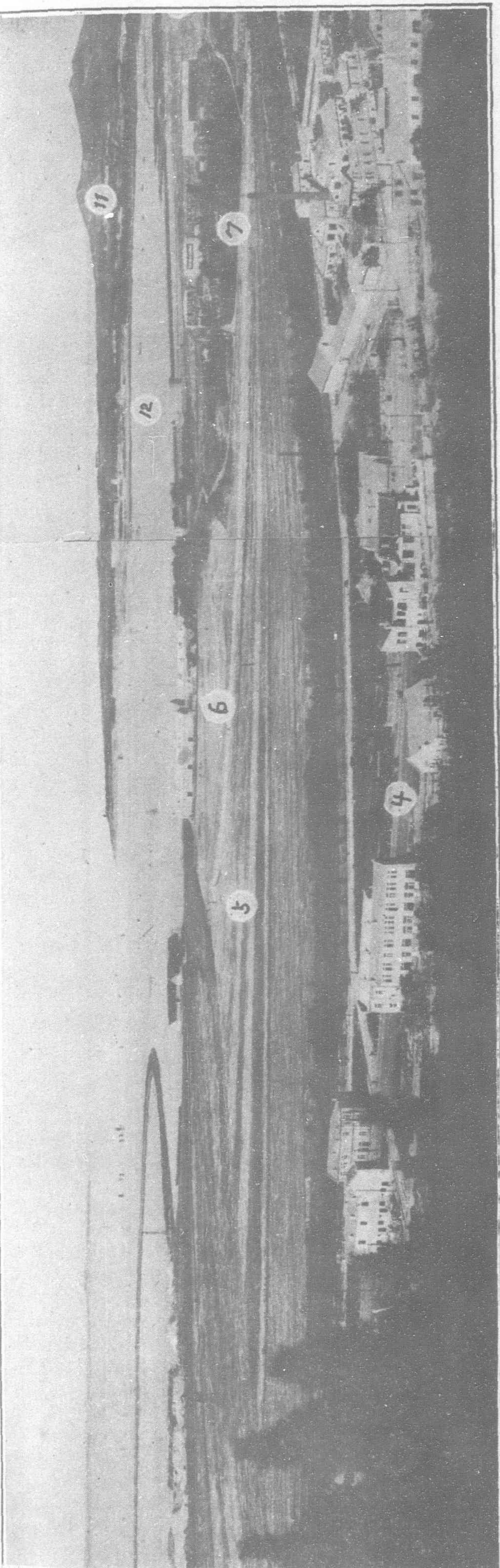
As will be seen elsewhere in this number, the Japanese authorities planned a large factory district as an extension of the original port and are reclaiming another extensive area for further development. The rapidity with which these areas were developed and brought within the city limits may be likened to the traditional booms in laying out and building some of the Western American towns. Within the limits of this new district are located the tank installations of the Standard Oil Company of New York and those of the Asiatic Petroleum Company, an equally important British concern. The Japanese municipal authorities in charge of the work of extension looked ahead and saw that

at the rate of building progress these tanks would soon be brought within the factory limits and become a menace to surrounding property. Therefore, they recommended to the civil administrator that an order be issued for their removal. This order was written and delivered on June 20, 1919, and when its contents were reported in New York it was asserted that the Japanese had confiscated the American oil properties at Tsingtau. Now, there is little doubt that the Japanese were well within their rights in looking far enough ahead to provide for the safety of the new industrial district, but they overlooked that such a sudden order without explanation or previous warning would create misunderstandings. At that time, it was accepted as a fact that Japan would adhere to her note of May 25, 1915, covering her



DR. M. AKIYAMA

Chief Civil Administrator of the Kiaochau Leased Territory since the Office was Created in October, 1917. He was Formerly in Korea in a Similar Capacity under Marshal Terauchi. An Accomplished Jurist and International Lawyer, he Stands for the Co-operation of all Nations in the Development of the Trade and Industry of the Leased Territory. It is due to his Intelligent Direction that Tsingtau has Forged Ahead like a Boom City of the American West, into one of the Most Promising Industrial Centres of China. He welcomes complaints Amicably to Adjust all Difficulties that may Arise.



#### THE FACTORY DISTRICT OF TSINGTAU

The above illustration shows the exact location of the tank installations of the Standard Oil Company of New York and the Asiatic Petroleum Company, Ltd., of London. The unoccupied area in the foreground has been reclaimed, filled in, and laid out to streets for the further extension of the factory district part of which is seen in the near foreground. The proximity of the tanks to the wharf shown on the extreme left makes this location a most desirable one. With the spread of the city, the time must come when the installations will have to be removed. Until such time, they will remain where they are.

conditions for the future restoration of the port to China, and which provided for an exclusive Japanese concession. It was believed that she was carving out the most valuable section of Tsingtau, adjacent to the docks and railway terminus, for her own exclusive use. Without following all the details of the settlement of this question, it may be said that it was amicably adjusted last year when the British Ambassador at Tokyo, Sir Charles Elliott, visited the port, and talked the matter over with Dr. Akiyama. The American and British oil tank installations are still in their original locations and will not have to move until such time as buildings in the new factory district reach a point where the proximity of the oil tanks would become a public menace. Before that time arrives, it is confidently hoped by the Japanese that the question of the status of the port will have been amicably and honorably settled. If these plants are compelled to remove, it will be some Power, other than Japan, that will enforce the building regulations; and, by that time, the enhanced value of the ground will enable the oil companies to sell at a profit that will more than cover the cost of removing their plants. The oil tanks incident is closed, settled by an amicable conversation between two trained, capable officials.

#### A Wide Open Door

As far as I could see, the door to Shantung stands wide open. Tsingtau may be likened unto an open door partially obstructed by brambles and thistles, which hinder and sometimes prick the pedestrian on his way through. They are annoying, but anyone can easily cut his way through to commercial success. The Japanese are doing their best to uproot the thorny plants, and in time they will be successful.

Twelve years ago when travelling in Manchuria I made the acquaintance of a young, energetic Englishmen, who represented one of the most important British firms in China. He was ubiquitous. Whether in Changchun, Mukden, Newchwang, Dairen, or on the train, one ran into him. He was always on the job, clearing the way to a successful trade for his firm. He carried the proverbial chip on his shoulder, lodging complaints at once with the highest Japanese authorities whenever difficulties arose which seemed to interfere with his rights to equal opportunity. The Japanese directors of the South Manchuria Railway told me at the time that they appreciated his frankness and the spirit with which he had carried his gourches to them direct instead of sulking and accusing them of unfairness.

I found this old friend in Tsingtau, still representing the same old-established British hong, still fighting and persevering in the face of difficulties and intense competition, still going over the heads of subordinate officials with his complaints. His troubles are over. He has won for his firm their share of the business of the port by clearing away the brambles and thorns on the road to success. He does not fear Japanese competition; in fact, he says he rather welcomes it, as he knows that, with a fair field, he can overcome lower Japanese costs by British efficiency. He understands the Japanese and their ways. Here, it seemed to me, was the answer to the problem that is worrying many American businessmen in China.

We have often been told by one of the foremost American shipping magnates of the Pacific Coast, that "where the Jap goes in, the white man goes out." Remembering the many times I have heard his utterances repeated, I could not help but compare the methods of his firm with those of the older established British hong. What one could do, the other could also do. It seemed to me that the representative of the British hong had dug out the secret to success in China—that is to say, secret to new-comers, but well known to old timers. Keeping everlastingly at it is the key. China is no place for the quitter or get-rich-quick trader. The American or Briton who enters the field in the Far East in competition with the Japanese, must make up his mind to stick and fight it out. It has taken years for the British firm to establish itself firmly and successfully to combat the competition of Japan in her own bailiwick. But British dogged determination has done it. The British hong did not go out when the "Jap" came in. Not on your life! It

stuck. Bull-dog pertinacity and a determination to face and overcome obstacles pave the only road to success in China, as elsewhere; but more so in any territory where the European or American has to meet the full force of concentrated competition. The chief civil administrator at Tsingtau confided to me that although the British merchant sent his complaints to London before giving him an opportunity of investigating, if all foreigners in Tsingtau were like him, there would be an end to serious misunderstandings.

I gathered from Dr. Akiyama's talk that if the foreign merchant would quit grousing and come out into the open with his complaints, so that the Japanese authorities would know what they had to contend against, there would be no misconceptions of Japan's policy. He added, that he always welcomed the visit of the British merchant or any other foreigner, coming to him with a complaint. He meant it. The representative of Taikoo has won out, and his firm is placing another steamer on its weekly Tsingtau run. There is a moral to this story.

### Americans at Tsingtau

Now, let us take a look at the American business community of the port of Tsingtau. During the height of the agitation over

that can be said in regard to this is that the American firm negotiated a good-sized loan with the Japanese, and afterwards let them in on the ground-floor for 49 per cent. of the stock, at 400. Not a bad business deal for the American. Mr. Katz, it may be assumed, is a keen business man. He is now carrying out a fairly profitable American government contract in the Philippines, but there is no guarantee that this business will last forever. On the other hand, Japan is beginning to draw heavily upon China for beef. It has become part of the Japanese army ration, and I understand that a contract for half-a-million pounds will be let, this year. This is only the beginning of a new business, the development of which can be better appreciated when it is understood that there is little or no beef in Japan, itself. By the time the American army contract is completed, or awarded to some other firm, the house of Katz will have a brilliant future supplying the needs of Japan, through its influential Japanese partners.

Outside of the two American concerns I have mentioned, there were no others in the field up to last year. From time to time, representatives of American firms visited the port, securing a fair amount of business from the Shantung railway administration but making no attempt to participate in the greater general and

## The Celebrated Oil Tanks Removal Order:

*The following is the text of the order issued in June, 1919, for the removal of the Standard Oil and Asiatic Petroleum Companies tanks:*

“Realizing that the kerosine oil tank at Tsaochutan, belonging to the above-named Company, is a source of danger to the public welfare, the same is ordered to be removed to any place except the Western side of the line between the mouth of the Kai-Haku River and the centre of the Asahi Bay, passing the Eastern corner of Taitungchen and the top of Mount Asahi.

“The said removal to be effected by the 31st of March, 1921.

“(Signed) MENICHI OSHIMA,  
“Commander-in-Chief,  
“Tsingtau Force.”

“Dated June 20, 1919.

Japan's alleged discrimination against American interests in Shantung there were only two American firms in the port, the Standard Oil Company of New York, and William Katz, a naturalized American citizen of Russian origin engaged in the cattle and meat business and operating a refrigerating plant. This gentleman is also a large stockholder in the China Mongolia Export Company (also an American enterprise) operating a cold storage plant at Tientsin. The firm of William Katz in Tsingtau holds the contract for the supply of fresh beef to the American army in the Philippines. The company is organized under the laws of Delaware, with 49 per cent. of the shares now held by the Japanese firm of Okura & Company. It is a matter of public knowledge that the Japanese firm paid Yen 600,000 for its half-interest in a company capitalized at Yen 300,000. It is necessary to bring out these facts, as the story is confidentially circulated throughout China that the Japanese brought pressure upon Mr. Katz to take them in as partners. All

import and export trade. Shantung products exported to the United States went largely by way of Japan and paid a profit to the Japanese merchant. Many American firms desiring to escape from this condition, attempted to establish direct connections with the native dealers, but, as the latter are not equipped for such business, nothing came of it. It was natural, under the circumstances, that the business of the port, as far as America was concerned, should go on through Japanese agencies.

In the hope of assisting direct American trade, the International Banking Corporation opened a branch office in the port in 1919; and, later, the China Pacific Company of Portland entered the field and for some time have been sending a steamer each month to the port for cargo. An American firm operates through a British concern managed by a Japanese. Mr. Terrel Adams, another American, is interested in automobiles and a general commission business. As yet, there is no American firm in Tsingtau

making a specialty of purchasing general cargo for export or the general combined export and import business.

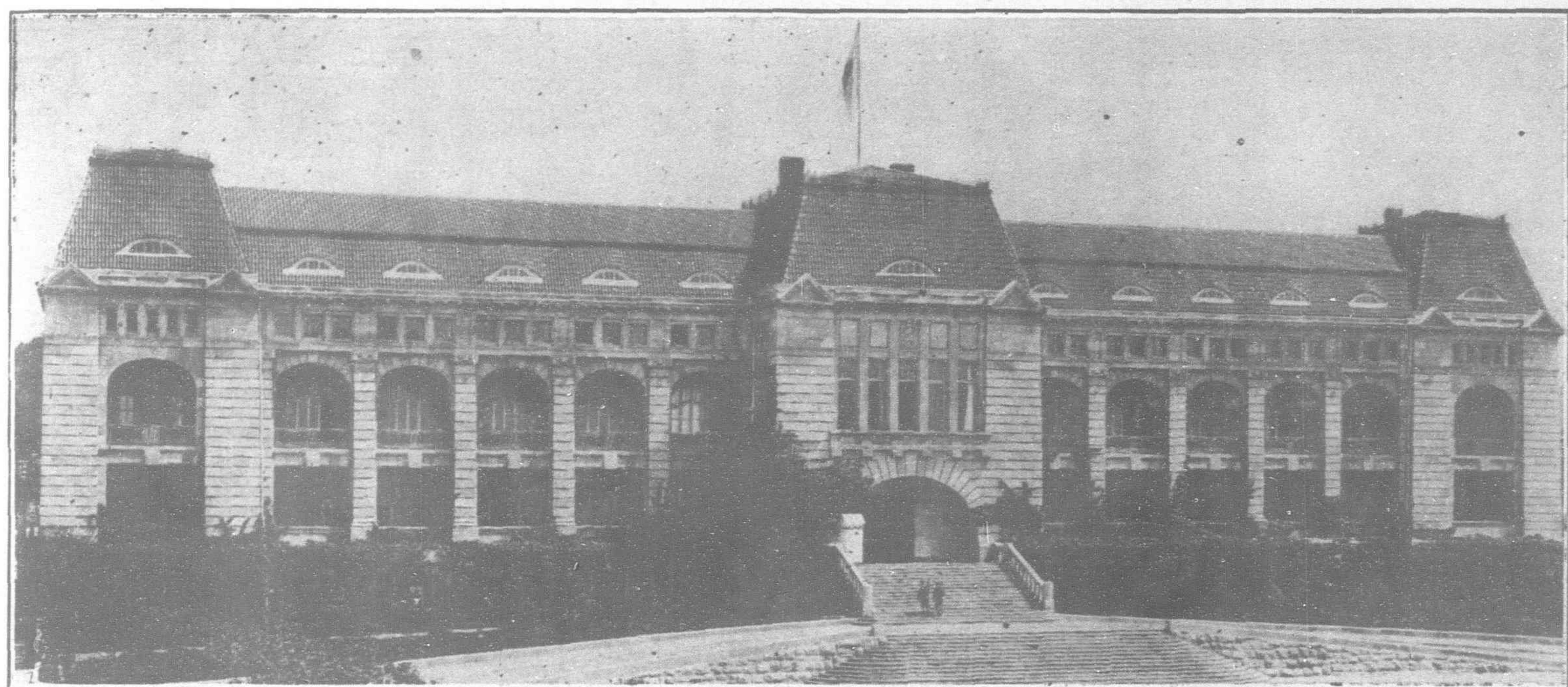
These are the facts as I found them. Aside from the Standard Oil tank trouble already mentioned, there was only one other incident that occasioned correspondence between the United States state department and the Japanese foreign office.

### The Missionary School Case

While the anti-Japanese agitation was at its peak in 1919, the Japanese authorities at Tsingtau ordered closed the Hugh O'Neill, Jr., Boys' High School, conducted by the American Presbyterian Mission. The Japanese police claimed to have evidence that convicted the Chinese principal of the school, a Mr. Wang, of circulating anti-Japanese propaganda. The American heads of the school stoutly protested and defended his innocence, but the Japanese authorities reposed confidence in the reports of their secret police, which they could not make public without revealing the working of its organization. On the Japanese side it was clearly a case where the higher authorities had no option other than to be guided by the reports and evidence submitted by their own sub-

port authorities, is "first come, first served." They try to live up to it, but it is not always possible to satisfy everybody. The wharves have had to handle an ever-increasing volume of freight, and difficulties were inevitable. To obviate any possibility of further complaints about delays in docking and unloading, and to provide for the expansion of trade, the Japanese will start work on the third pier this year and enlarge No. 1 Pier by building a berth for its full length on the south or uncompleted side. This enlargement of the port will effectively do away with any further complaints arising from so-called discrimination against foreign shipping.

But British shipping concerns in Tsingtau apparently found sufficient causes for resentment, and I am reliably informed that during last year fifteen complaints were laid before the British consular officials, and sent to Downing Street, charging the Japanese port authorities with "discrimination and inefficiency." When a sufficient number of these annoying incidents had accumulated, the foreign secretary called the Japanese ambassador, and laid the facts before him. The ambassador forwarded them to Tokyo, whence they were promptly sent to Dr. Akiyama, asking for an investigation and explanation. It was the first notice to the Tsingtau authorities that all was not well at the wharves



GOVERNMENT HOUSE AT TSINGTAU BUILT BY THE GERMANS

Headquarters of the Japanese Military and Civil Administration.


ordinates. Coming as it did at a time of great friction, the incident gave rise to stories that American missionary schools were to be excluded from the Leased Territory and that a campaign against Americans in general had been inaugurated. These reports, circulated broadcast throughout China by the press of Shanghai at the beginning of the summer season, had a most alarming effect, causing many foreigners to hesitate before sending their families to Tsingtau for vacation. The matter has since been amicably adjusted; the order for opening the school was given on March 9, 1920. One or two other very minor incidents have occurred, which would have passed unnoticed in any other part of the world. So much for discrimination against American interests.

### British Complaints and Redress

The British have had their own troubles with the Japanese, and, as usual, these have to do with matters directly connected with shipping, wharf privileges, unloading and quarantines. I have not made a careful investigation into these incidents, as the British merchants and authorities have their own sensible and happy faculty of solving such difficulties with their ally. The rule of the

and, apparently, the riot act was read to those having charge of this department.

Now, I can readily understand a charge of discrimination, but to cap this with "inefficiency" is somewhat disconcerting. If inefficiency in public office, can be construed into a matter for diplomatic complaint, a fine precedent has been established for future trouble. What a wonderful story could be written about "Inefficients in High Places" these past six years. Scholarly bunglers and political muddlers have caused untold misery in many nations of the earth, and escaped diplomatic or political censure. In the face of such examples of ineptitude as might be cited the charge of inefficiency against Japan, because of some subordinate harbor official, is almost grotesque. However, it is a matter of record and it is far more to the point to charge the Japanese harbor officials with inefficiency than to assume that this lack of experience in dealing with foreigners which gives rise to misunderstandings is due to a set policy on the part of the Japanese government wilfully to discriminate against the trade of other nations. There are undoubtedly many inefficient officials in the Japanese public service. On the other hand, the Japanese can plead extenuating circumstances. The port is still under military



MAP OF THE NORTH-EAST PART OF TSINGTAU IN 1914

By comparing this map of the city as it was when the Japanese took possession in 1914 with the one on the other page which shows the same district in 1921, great improvements and extensions made by the Japanese will be appreciated. The German had made no serious attempt to develop the industrial possibilities of the port, confining their building activities to the residential section far removed from the wharves and railway centre. The Japanese, however, were quick to see the advantages offered under the treaties for industrial development and the desirability of the land in proximity to the ocean and land transportation centres for factory purposes. Any real expansion of the city had to take place in this direction. This gave rise to the belief that the Japanese were planning to create a separate Japanese settlement in the commercial heart of an international one, and this, more than any other thing, has created jealousies, and rivalries, and kept other foreign firms from taking advantage of opportunities open to all. Study of these plans will show how the Japanese have reclaimed the waste marsh land adjacent to the tank installations and straightened out the railway terminals to the docks across the reclaimed area, and laid it out for streets. The development of the city in other directions is also clearly shown by the new streets, most of which are built up with residences and factories.



MAP OF THE NORTH-EAST PART OF TSINGTAU IN 1921.

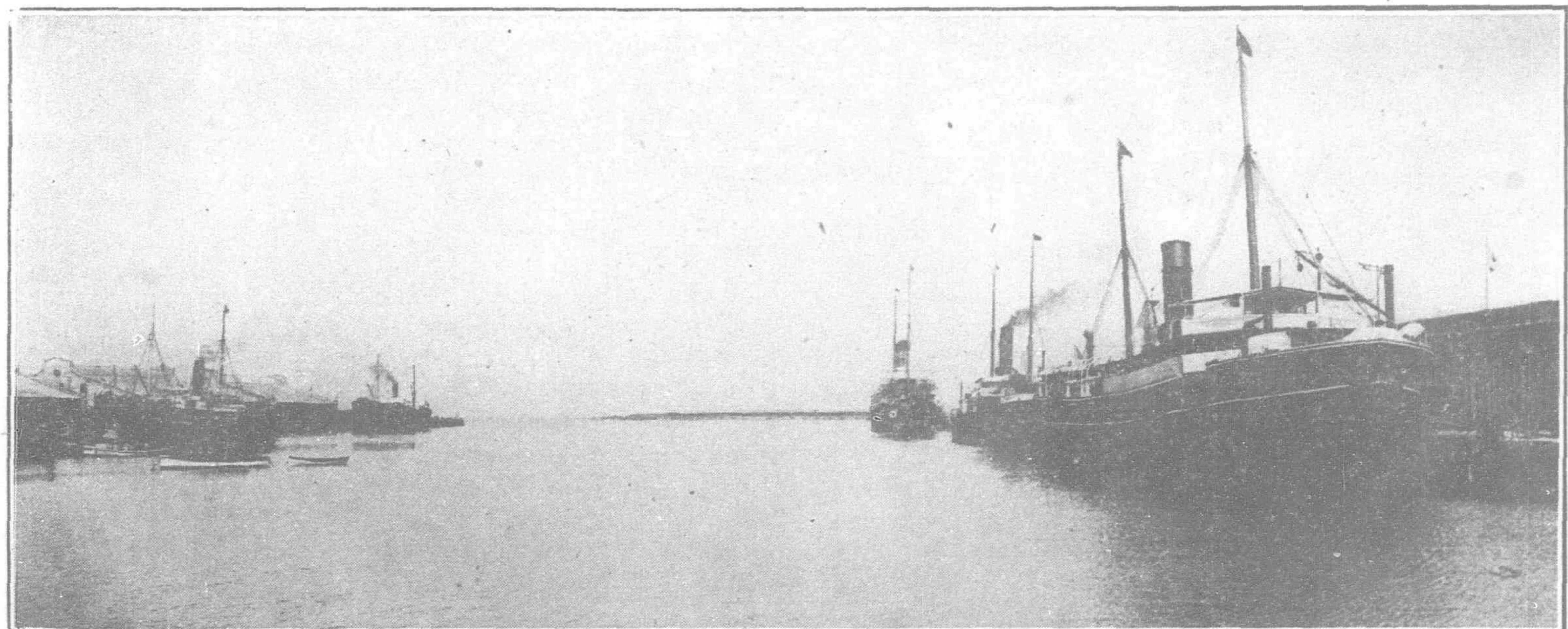
Showing the extension of the city in that direction under Japanese administration. Further particulars of these improvements will be found in the article on Tsingtao appearing in this number of THE FAR EASTERN REVIEW.

rule, pending such time as China may need to enter upon negotiations for deciding its future status.

Militarist are much the same the world over, when in supreme control. We can imagine a case where a Japanese ship entering the port of Tsingtau with cargo consigned to the military authorities may be given the right of way over all others waiting their turn to dock. We have seen similar happenings in other parts of the world occupied by other armies. There may have been only one case of army stores in the cargo of the steamer, which justified preferential treatment from the military viewpoint. I do not say that this actually was the case in Tsingtau, as I am ignorant of the details of the charges of discrimination. But it might well have been so, as long as the military rule was supreme. Whatever these charges consisted of, it is safe to say the mere fact that they were made without being first brought to the attention of the higher officials of the port has materially helped to clarify the

efficiency, of organization, and sticking to it, without allowing petty and minor incidents to discourage one.

There is no need for Americans to lose their opportunity to share in the prosperity of Tsingtau. The evidence very clearly indicates "that they cried before they were hurt," misled by erroneous reports scattered broadcast in order to create discord and strife and discredit the Japanese. Dr. Akiyama says that his government welcomes the co-operation of American firms and capital in developing Tsingtau and the Leased Territory as long as Japan is in temporary control. Despite the fact that American trading firms have been conspicuous by their absence, and that our press has poured out the vials of its wrath on "Japanese discrimination against the trade of America in Shantung," the Japanese authorities have been most liberal in their purchases from America. The American trader in China perhaps has not participated in this business, but the American manufacturer has reaped a good profit



THE WHARVES AT TSINGTAU

The above shows two of the wharves at Tsingtau, whose management by the Japanese Port Authorities has been characterized by British steamship interests as "inefficient." The wharf on the left is not completed on the other side, having berths for only three steamers. The wharf on the right has docking space on both sides and can accommodate six to eight steamers at a time, according to their size. The pier end berth of this wharf on the sheltered side is considered by captains as the most desirable, being sheltered from the north-west gales in winter by the warehouse on the dock. Much of the difficulty in handling the commerce of the port has arisen from the desire to have this berth in preference to others. A Japanese engineer is now in Tsingtau to complete the berthing capacity of the No. 1 Wharf by dredging out the other side. The smaller pier or No. 3, hitherto used exclusively for oil, is to be enlarged this year, to the size of the other wharves, thus providing accommodation for nine to twelve more steamers at a time, and doing away with any possible future cause for misunderstanding in the management of the wharves.

atmosphere. Complaints are now welcomed by the chief civil administrator, whose policy is to discriminate as far as possible in favor of the foreign shipper. The extension of the harbor facilities will put an end to all such complaints in the future.

#### A Free Field for All

Dr. Akiyama, the chief civil administrator, requested me to give special expression to his standing invitation to foreign firms to come and help in the development of Tsingtau and the Leased Territory. The field is free. The Door is open for the acquisition of residential and factory properties. There is no discrimination. All that is required is initiative; and, again quoting, Dr. Akiyama, there will be no misunderstandings if complaints, as they arise, are brought fairly and squarely before him.

It is true that competition is keen. It is keen in any part of China. The newcomer, the "griffin," has much to learn. He has a hard road to compete successfully with old established hongs who have their roots firmly in the ground. This condition, however, is beyond governmental regulation. It is merely a matter of

and seen his standards and specifications installed and the old German railway, on which not an American nail was used, gradually being converted into an up-to-date American line. As will be seen later on from the railway statistics, the Japanese Shantung railway administration has bought, and (what is more important) paid in cash for railway materials in Shantung since 1916 the sum of \$10,397,226 gold, or almost equal to the original cost of the line; and, of this amount, one-third, or \$3,046,468 gold, went to American manufacturers. This included \$661,293 for machine tools for the Syfang Shops. It is true perhaps that the Japanese have bought in the cheapest market, but it is also true that they did the same in Manchuria and did for American manufacturers of railway materials in China something which up to date we have been unable to do ourselves. There is no obligation on the part of the Japanese government or engineers to adopt American standards and specifications. That they have done so in Manchuria and Shantung would seem to imply that they prefer them to European standards for the particular class of work for which they are used. It seems somewhat foolish and unbusinesslike that American manufacturers should permit this advantage to be taken from them.

# The Official Status of the Shantung Question

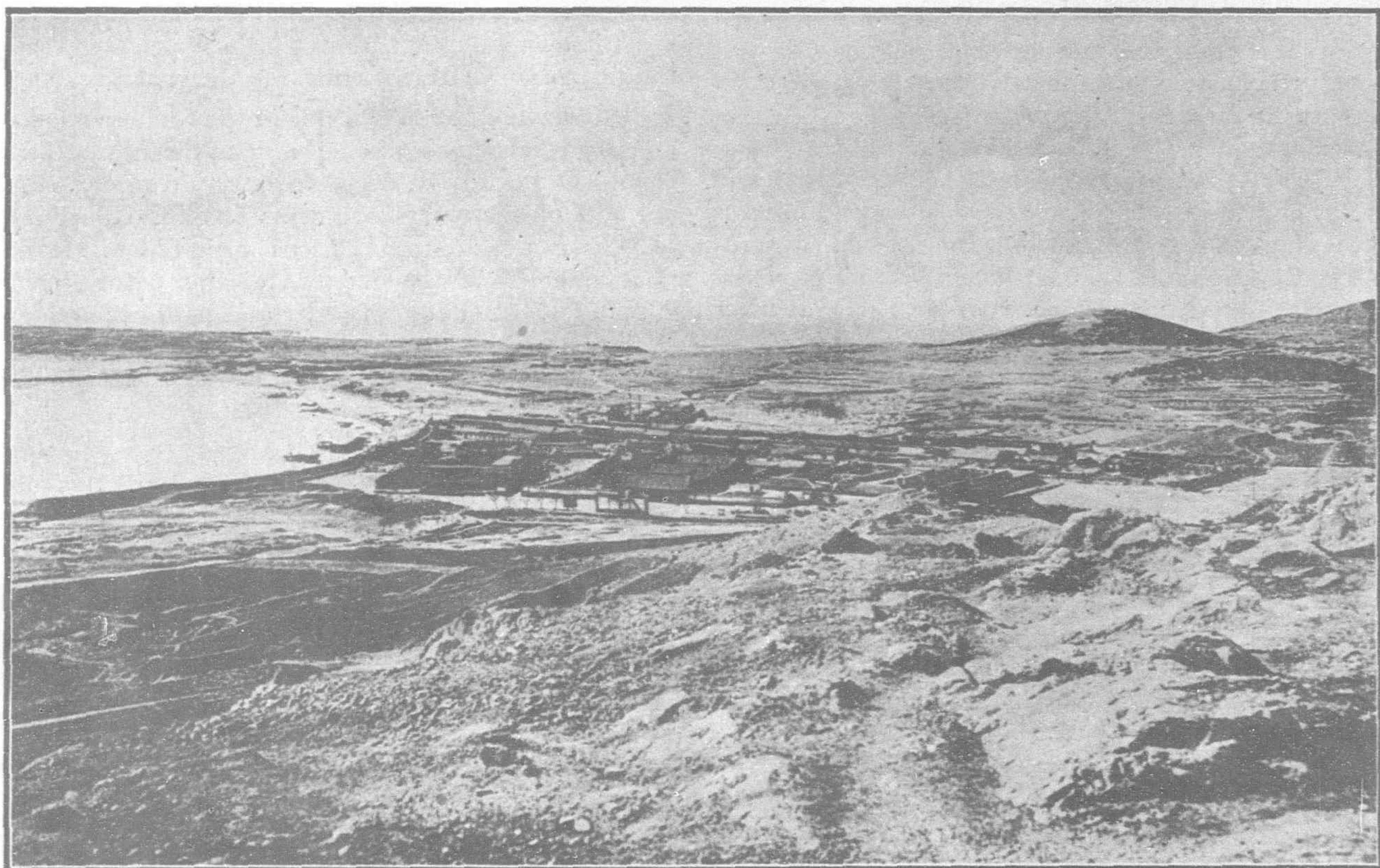
Statement Issued by the Japanese Ministry of Foreign Affairs, Tokyo, June 15, 1920

**W**HEN the Treaty of Peace with Germany became effective in January, 1920, and the German rights and interests in Shantung passed into the possession of Japan by virtue of the provisions of that treaty, the Japanese government, with the intention, in pursuance of their repeated declarations and pledges, of effecting the restoration of Kiaochau to China, and to make the necessary incidental arrangements, instructed the Japanese minister in Peking to inform the Chinese government:

(1) that the Japanese government desired to open negotiations with the Chinese government with regard to the restoration of Kiaochau to China and the settlement of the various details arising in connection with the matter, in order to arrive in this manner at a speedy solution of the entire question, and that they

were constrained to keep those troops stationed there for the time being in order to insure the security of communications and to safeguard the interests of Japan, and of China who is equally interested in the railway as a co-partner in the joint enterprise;—that they accordingly hoped that the Chinese government, appreciating the intentions of the Japanese government in this matter, would, with despatch, organize a police force to take the place of the Japanese troops in guarding the railway, in order that these Japanese troops might be withdrawn even before an agreement was reached on the main question of Shantung.

The foregoing was officially published on January 24 of this year, and the Japanese government made preparations to begin negotiations at any time, but three months passed without their receiving any reply from the Chinese government.



The old mud-walled Chinese fishing village of Tsingtau, which the Germans and Japanese developed into the present magnificent modern metropolis port and summer resort

hoped the Chinese government would make the necessary preparations for that purpose;

(2) that as regards the Japanese troops stationed along the Shantung Railway, not only was it the intention of the Japanese government to withdraw them, as a matter of course, upon an agreement being arrived at between the two governments as to the restoration of Kiaochau, but they were also prepared to effect the withdrawal as speedily as possible even before any such agreement was entered into;—that, in the absence of any force, however, to assume the duty of protecting the railway after evacuation, they

It is a source of the deepest regret to the Japanese government that, at a time when all the nations of the world are putting forward their best efforts for the establishment of an enduring peace, questions such as this should remain unsettled between Japan and China. The Japanese government have been informed that the Japanese charge d'affaires in Berlin has received from the German government the various documents specified in Art. 158 of the Peace Treaty. Consequently the Japanese government, being all the more desirous of arriving at a speedy settlement of the matter for the mutual benefit of the two nations, again on April 26

instructed the Japanese minister in Peking to request the Chinese government to take forthwith the necessary steps, of which the adoption was urged in their previous communication.

It was not until May 22 that the Chinese government sent a reply in the following sense:—

"The Chinese government have noted that it is the intention of the Japanese government, now that the Treaty of Peace has come into force, to restore Kiaochau to China and to prepare for the withdrawal of the troops from along the Kiaochau-Tsinanfu Railway. China, however, has not signed the Treaty of Peace with Germany, and is not therefore in a position to negotiate directly with Japan on the question of Tsingtau on the basis of that Treaty. Furthermore, as the Japanese minister at Peking is very well aware, the whole people of China have assumed a strongly antagonistic attitude in regard to the question in hand. For these two reasons, and because of the importance they attach to amity between Japan and China, the Chinese government naturally felt it inconvenient to make a reply at the time. On the other hand, the Japanese military establishments within and without the leased territory of Kiaochau have been rendered unnecessary, and as it is the hearty desire of the people and government of China to have the conditions along the Shantung Railway restored to the pre-war footing, the Chinese government proposes to form at an early date a proper organization to take the place of the Japanese troops in guarding the whole line. However, this proposition has nothing to do with the settlement of the question of Kiaochau and the Chinese government trust that the Japanese government will not delay the withdrawal of the troops on account of that question."

Upon receipt of this reply, the Japanese government addressed the following note to the Chinese government, urging reconsideration of the position taken by them:—

"In their memorandum, the Chinese government state that, attaching as they do great importance to amity between Japan and China, they do not find themselves in a position promptly to meet the request of the Japanese government for opening direct negotiations on the Shantung question for the reason that they have not signed the treaty with Germany and because of the strong attitude of antagonism on the part of the whole Chinese people on this question.

"In view of the existence of a formal agreement between the two governments as to the fundamental principle governing the settlement of the question under discussion, and in view, further, of the fact that the repeated declarations of the Japanese government leave no room for doubt as to the singleness of purpose with which Japan seeks a fair and just settlement of the question at the earliest possible date, the Japanese government fail to see the force of the argument advanced in the Chinese memorandum.

"It is a positive fact that all the rights and interests which Germany formerly possessed in Shantung by virtue of a treaty with China have been transferred to Japan in accordance with the Treaty of Peace. The Chinese government having, in the above-mentioned formal agreement with Japan, pledged themselves beforehand to acknowledge and consent to this transfer, these rights and interests have of right come into the possession of Japan, irrespective of whether or not the Chinese government have signed the Peace Treaty with Germany.

"Immediately upon the coming into force of the Treaty of Peace, therefore, the Japanese government, in accordance with their repeated declarations and with agreements entered into, proposed to the Chinese government to open negotiations with a view to restore to China such of the rights and interests in Shantung as were to be restored, and to confirm in this connection such matters as required confirmation. The Japanese government were confident at the time that the Chinese government would respond readily to the proposal, and that they would not hesitate to open the path for the Japanese government to demonstrate in a concrete way their attitude of fairness and justice towards China. Contrary to these expectations, however, the Chinese government, after a delay of several months, have returned a reply that they do not find it

advisable to open negotiations, giving as their reason the abstention of China from signing the Treaty of Peace and the antagonism of the Chinese people.

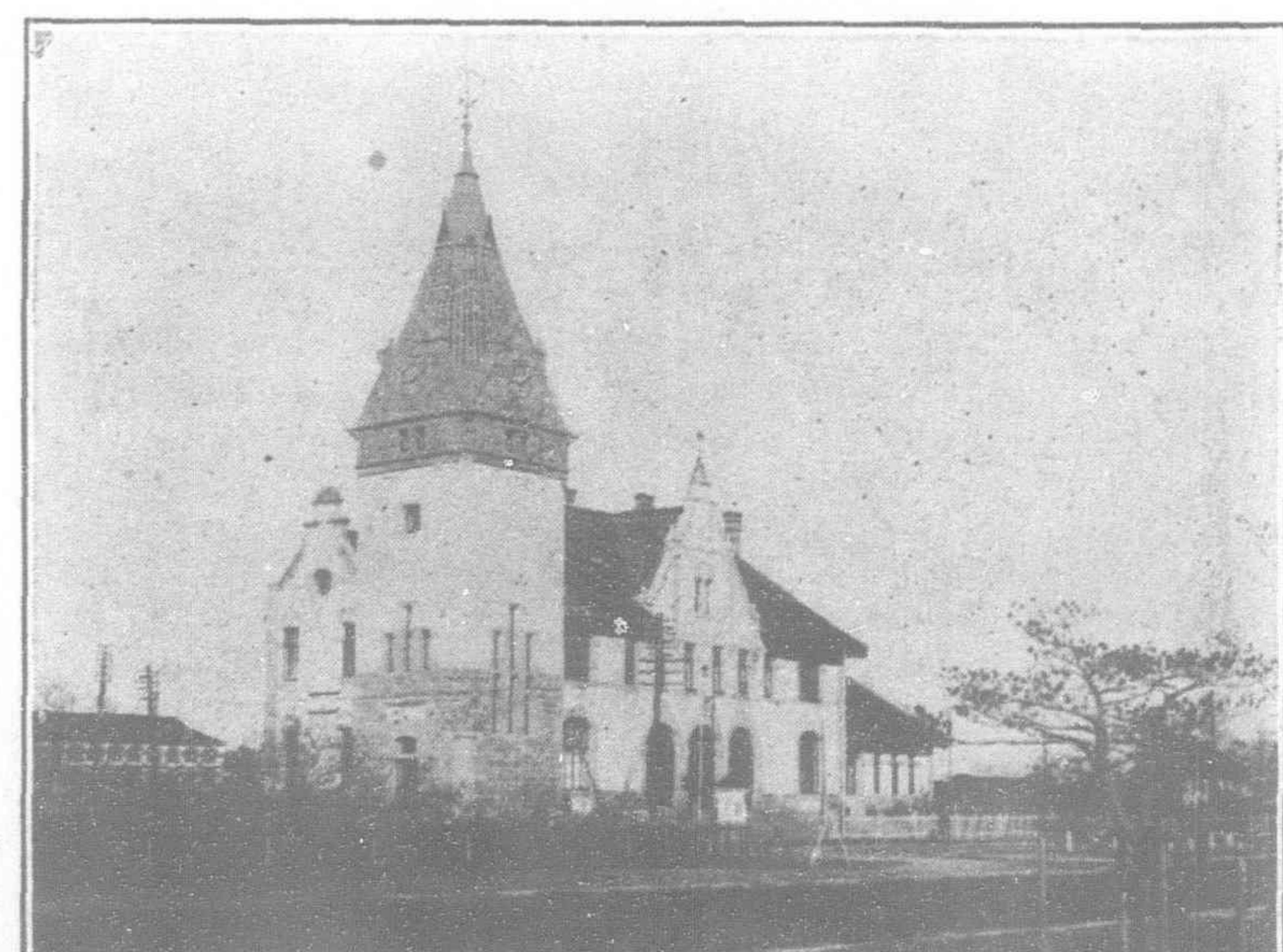
"This attitude on the part of the Chinese government prevents the Japanese government from realizing their sincere desire to carry out, with the utmost good faith, their treaty obligations, and to fulfill their expressed pledges. It need hardly be pointed out with whom rests the responsibility for delaying the settlement of the questions arising with regard to Shantung. The Japanese government, however, holding in high regard, as they have always done, amity and good neighborhood with China, hereby repeat the declaration that they are ready to negotiate on this question at any time the Chinese government may deem convenient. The Japanese government do not believe it to be the desire of the Chinese government to be held responsible for the delay in the eyes of the world, and it is in this belief that they sincerely urge the Chinese government to reconsider the matter.

"As to the railway guard in Shantung, it is the intention of the Japanese government, as stated in their note of January 19, 1920, to withdraw the Japanese troops, even before the conclusion of negotiations regarding Shantung, as soon as a Chinese police force is organized to guard the railway.

"The Japanese government, feeling confident that the Shantung railway police guard will be organized in accordance with the promise of the Chinese government and the understanding reached between Japan and the Powers at the Paris Conference, are prepared to withdraw the troops as soon as such police organization shall have been completed by the Chinese government and the Chinese and Japanese officials concerned shall have settled the procedure of transferring the duty of guarding the railway.

"Reference has been made in the Chinese memorandum to the military establishment in and around the Leased Territory of Kiaochau. It is with the desire to settle definitely, *inter alia*, the disposition of these establishments that the Japanese government seek to commence negotiations with China. It need hardly be pointed out that the question of this nature, constituting as it does only one item out of many questions calling for discussion and settlement, would naturally find its solution when the Chinese government proceed to negotiate, and a settlement of the Shantung question as a whole is reached."

While it is a source of the deepest regret to the Japanese government that the existing understandings concerning the subject under review cannot at once be carried out, they remain none the less unchanged in their sincere desire to effect a fair and amicable settlement of this question with the least possible delay, and are prepared to make further efforts towards the realization of that fixed policy.



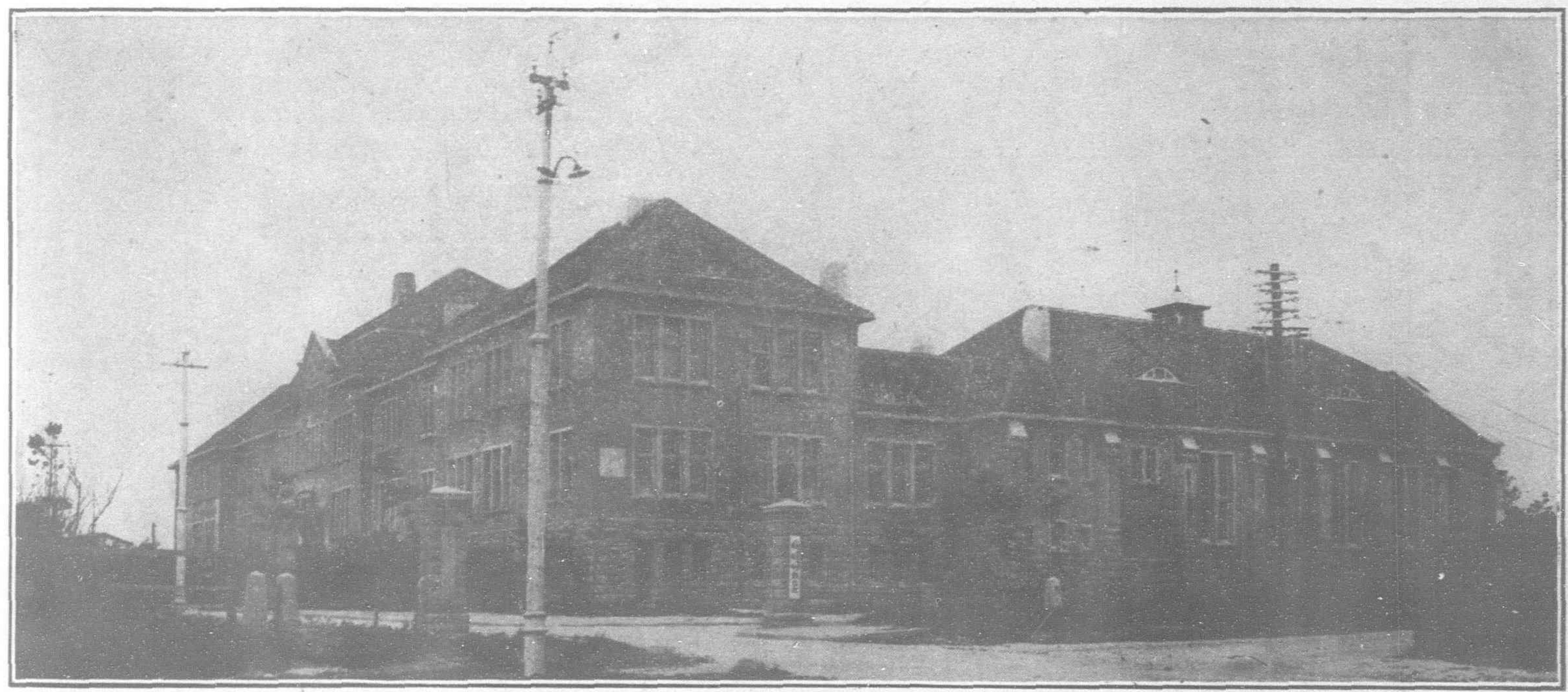
Tsingtau Station of the Shantung Railway

# The Status and Future of the Shantung Railway

**M**HEN the Japanese military authorities took over the properties of the Shantung Railway in 1914, the act seemed to be in violation of the established principle of international law covering the inviolability of private property. In an article entitled "The Status of the Shantung Railway" printed in the November, 1914, number of *THE FAR EASTERN REVIEW*, it was contended that the shareholders or owners were entitled to a reasonable price for its confiscation and an indemnity for the use of the line during the time they were forcibly withheld from legitimate enjoyment of the property. The value was worked out at about £5,000,000, which was held at that time to be an adequate compensation of the private owners of the railway and mines. This opinion was based upon the fact that, although the concession for the railway had been extracted from China by the imperial German government, the charter for its construction and operation had been granted to a private company,

and liquidate all property, rights, and interests belonging at the date of the coming into force of the present Treaty to German nationals, or companies controlled by them, within their territories, colonies, possessions and protectorates, including territories ceded to them by the present treaty."

Mr. J. M. Keynes in his book on "The Economic Consequences of the Peace," says that "the treatment of such property forms, indeed, a very significant and material section of the Treaty, which has not received as much attention as it merits, although it was the subject of exceptionally violent objection on the part of the German delegates at Versailles. So far as I know, there is no precedent in any peace treaty of recent history for the treatment of private property set forth below (in the treaty) and the German representatives urged that the precedent now established strikes a dangerous and immoral blow at the security of private property everywhere." Mr. Keynes expresses his opinion that "this is an exaggeration and



Shantung Railway Administration Building at Tsingtau

in which the German government held no pecuniary interest, other than a reasonable tax which took the form of a participation in the excess profits over five per cent., in a fair revenue to the state for a public utility franchise.

The writer believed, at that time, that the action of Japan foreshadowed a new interpretation of international law, that the whole fabric of the inviolability of private property under established law controlling warfare, would tumble to pieces, and that it would be extremely difficult to interest capitalists in future foreign ventures. This vision of the future has proved true.


The German Shantung Railway Company, as a private enterprise, duly filed its claim for indemnity and other damages for the confiscation of its properties, but, during the war, such a claim received no notice from the Japanese government. At the Peace Conference my prophecy was fulfilled. A wholesale expropriation of German private property took place without the Allies affording any compensation to the individuals. Article 297 (6) of the Treaty reads:—

"The allied and associated powers reserve the right to retain

the sharp distinction, approved by custom and convention during the past two centuries, between the property and rights of a state and the property and rights of its nationals is an artificial one, which is rapidly being put out of date by many other influences than the Peace Treaty and is inappropriate to modern socialistic conceptions of the relations between the state and its citizens. It is true, however, that the Treaty strikes a destructive blow at a conception which lies at the root of much of so-called international law, as this has been expounded hitherto."

The old conception has given place to the new. The rights of the private German owners of the Shantung railway have passed to the Japanese under the provisions of the Peace Treaty, in the same manner that the rights of individual Germans in other parts of the world have been taken over by others of the allied and associated powers. It is something that war-makers in all countries should ponder over very seriously. The defeated must pay. Woe to the vanquished! The lesson of the Peace Conference has been brought home to international finances.

Co-operation has taken the place of pre-war competition for loans



### Übersichtliche Angaben

Länge der Hauptlinie Chingtao - Sianfu - West: 395.373 fm  
 " - Zweiglinie Szechanglien - Poischen 39.2 "  
 " - Zechenbahn Fangtze 4.0 "  
 " - Zechenbahn Szechuan 6.5 "  
 " des Anschlussgleises Sianfu - Ost - 6.0 "  
 " - Übwangtauschanne

Anzahl der Stationen: 64  
 " " Westerstationen: 20  
 " " Drischoscheiben: 8  
 " " Gleiswaagen: 12  
 " " Lokomotiven: 41  
 " " Gepäck- und Personenwaagen: 105  
 " " Güterwaagen: 1057

Brücken: Öffnungen: 1150 Stck.  
 " Wechselsweite: 7700 m.  
 " " Öffnungen: 561 Stck.  
 " " Wechselsweite: 640 m.  
 " Grade: 326.733 fm = 75.186 %  
 " " Steigungen: 107.834 " = 24.814 %  
 " " " " 176.375 " = 40.586 %  
 " Gefälle 116.937 " = 24.908 %  
 " " " " 141.261 " = 32.506 %

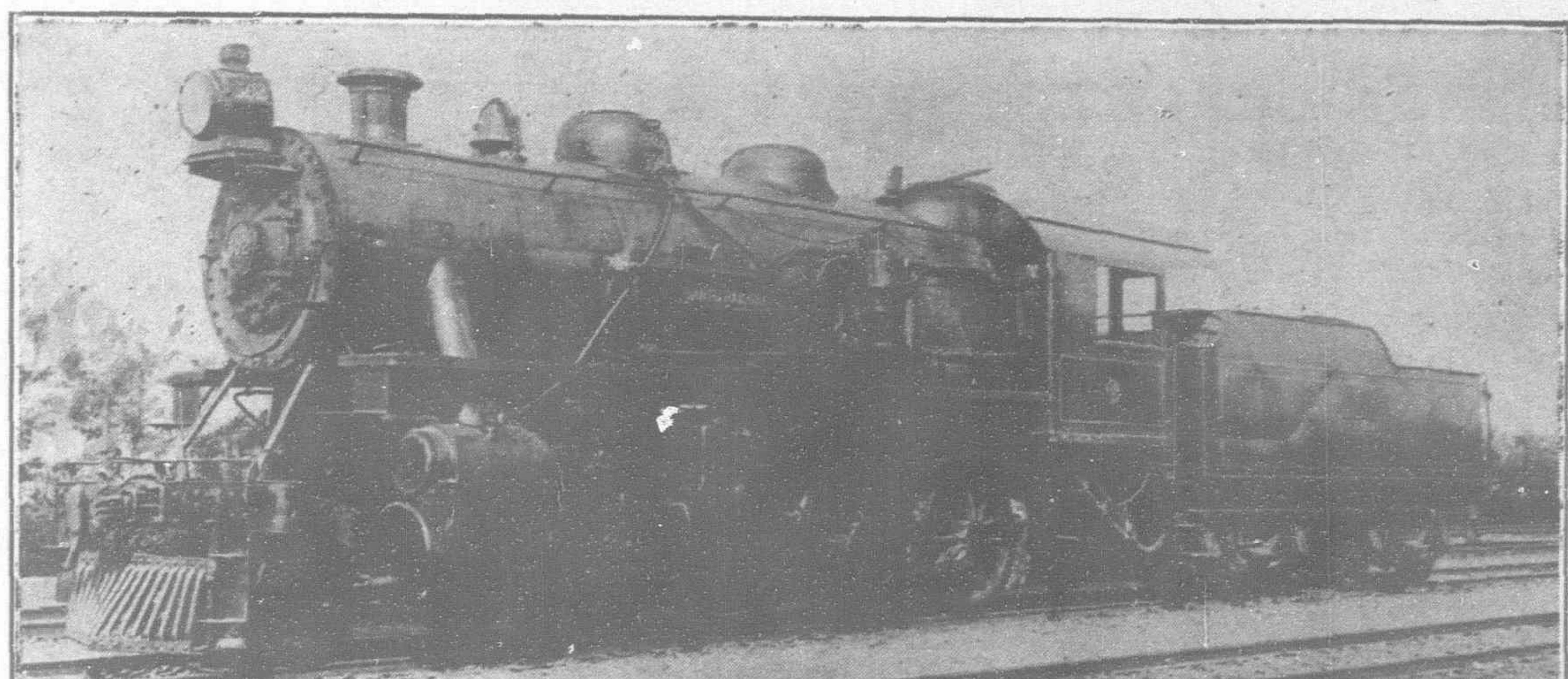
and concessions in the "powder magazines" of the world. The precedent established by the peace conference overturning all previous conceptions about the inviolability of private property in war time, is something that war-makers on both sides of the Pacific should carefully bear in mind.

Little profit can be derived at this stage in speculating upon the possible future status of the railway. As the matter stands, the Japanese government pledged itself orally at the peace conference, and in other documents to convert the Shantung railway and mines into a Sino-Japanese joint enterprise. The details of such an arrangement cannot be arrived at until such time as China is prepared to open direct negotiations with Japan for the settlement of the question. The railway has made wonderful progress under Japanese direction, and the mines are being developed to provide a greater output. The prosperity that has come to Manchuria can be quickly duplicated in Shantung, under some amicable and harmonious adjustment of the present difficulties.

Undoubtedly, a great opportunity is being wasted. Even biased critics of Japanese activities in Shantung are unanimous in conceding to Japan due credit for the great advancements made in developing its commerce and resources.

Until such time as China is placed upon her feet and full sovereignty restored in other parts of her vast territory, it seems futile to expect that Japan will surrender rights enjoyed by other powers in other parts of China. Pending such a general solution of China's troubles, there is no good reason why Japan's idea about internationalizing Tsingtau should not be adopted, and the railways and mines operated as joint Sino-Japanese enterprises, with a proper division of administrative control that will assure the continued development of these properties and the port.

Tsingtau is the only good harbor in north China: the natural outlets for the products of a vast lumberland stretching north to Peking and west to Kansu. The small ports of Hulutao, Chinwangtao, or Tientsin, can never adequately serve as the outlets for a great industrialized north China. The natural port for this vast region is Tsingtau. Political questions and international rivalries alone bar the way to the utilization of this natural outlet to its full capacity. British interests lean naturally towards any scheme that will attract this trade into Yangtze Valley outlets, while China, as things now stand, would borrow millions to create a new port on a mud flat, rather than consent to the development of Tsingtau. Early last year, the Chinese government signed a new loan agreement with Belgian and Dutch bankers for the Lung-Hai railway, which provided for the construction of a port at Haichow, as an outlet to



American Consolidation Locomotives Purchased by the Japanese Railway Administration for the Shantung Railway

the railway. At its best, this harbor can be developed only at the cost of many millions into another dinky little third-rate China coast port, available only to shallow draft coasting steamers. It will always be dependent upon Tsingtau or Shanghai. Why proceed with the waste of good money so badly needed elsewhere for real construction work. The Belgian Lung-Hai line from Hsuchow to the sea at Haichow, where a port must be created, serves no good purpose other than enhancing the value of private properties owned by prominent mandarins, and providing work for the Belgian and Dutch engineers and contractors.

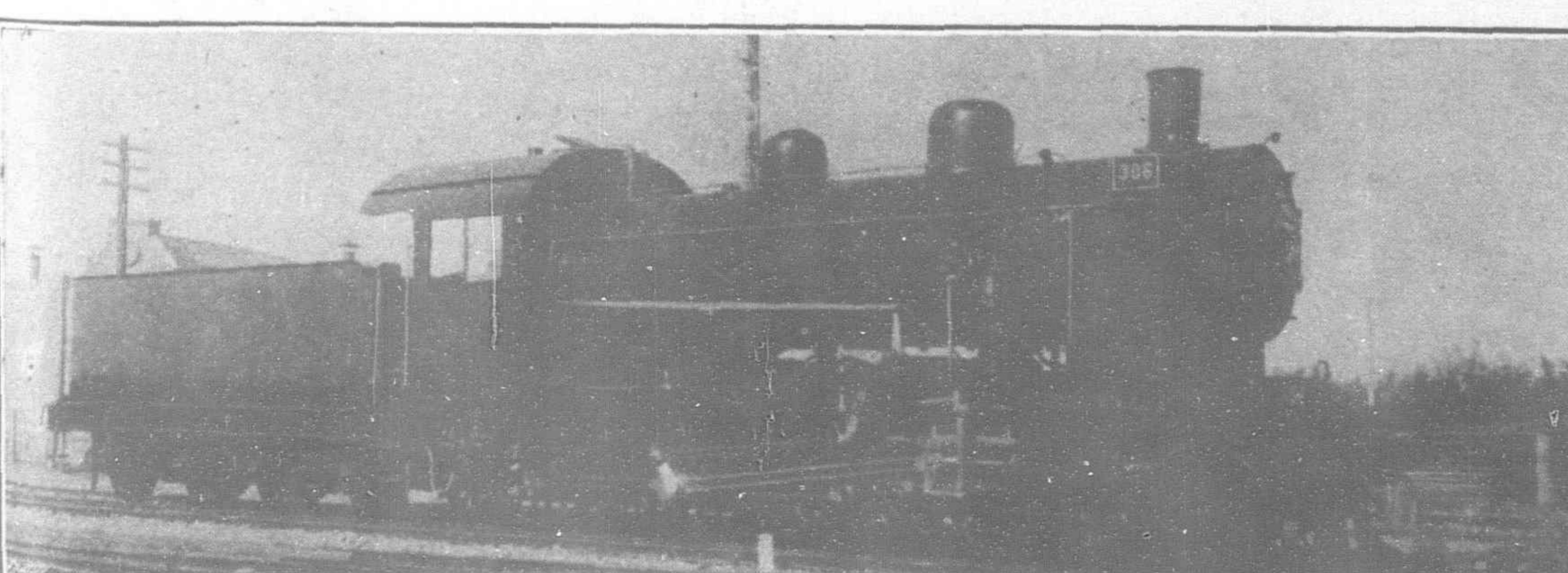
On the north of Tsingtau lies the isolated port of Chefoo, under Chinese jurisdiction, and for the past twelve years, we have been annually told that a railway was to be constructed to connect the port with Weihaiwei; the main object on the part of the Chinese being to divert the trade from the natural outlet at Tsingtau. Here, again, is a port that even with a railway into the interior, can only aspire to a second-rate place in the trade of China.

The solution of this problem would seem to lie in internationalizing the port of Tsingtau and the Shantung railways. Instead of wasting further loans on building the Haichow-Hsuchow section of the Lung-Hai line, the funds could be better utilized in building the line from Hsuchow to Kaomi, and the Dutch could be compensated for the loss of the Haichow-Haler contract by another equally profitable contract in Tsingtau.

Once the internationalization of Tsingtau is an accomplished fact, the other questions will solve themselves. The Kaomi-Hsuchow project and the expansion of the Shantung railway to Shuntehfu in the Peking-Hankow line, have been pooled by Japan in the Consortium. They have been internationalized. There remains, then, the one problem of the future status of the main Shantung railway; whether it should be operated as a Sino-Japanese enterprise, or whether the higher interests of Japan, China and the powers could best be advanced by internationalizing this line under the Consortium.

With Tsingtau as an international settlement, responsible to some supreme power for the maintenance of order, and the Kaomi-Hsuchow and Tsinan-Shuntehfu lines also internationalized, there ought to be some basis upon which Japan and China would be willing to put the Shantung railway into the common pot. It is unnecessary to say that the "supreme power" must be the rightful sovereign power—China.

If such a solution can be brought about, the way is cleared for progress in north China. The



Type of the German Express Locomotives in use on the Shantung Railway

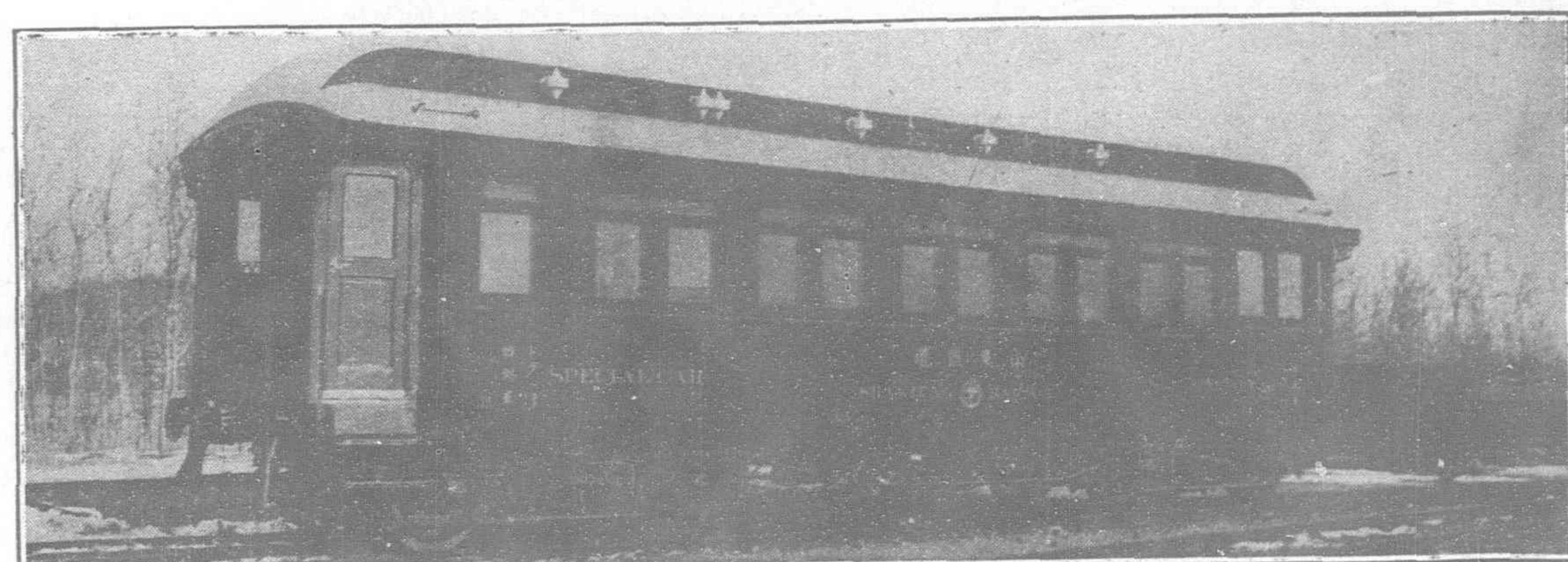
port of Tsingtau will come into its own, and discharge its natural functions as the deep water outlet to the northern half of China. Japan has taken two steps out of the three. She has practically announced her ideas on the internationalization of the port, and turned the Kaomi-Hsuchow and Tsinan-Shuntee projects into the international pot. If approached in the right spirit, she might also take the third step and accept some proposition on the basis of internationalizing the main railway artery through the province.

This is the one way to develop north China and open the door to real equal opportunity for the trade of all nations. Japanese, for the present, own the finest locations and properties in Tsingtau. They have earned the right to this preference by stepping in and doubling the size of the city and the trade of the port. But Tsingtau is capable of great expansion. There is plenty of land, and plenty of water in the bay. There is room for a great city spreading out along the waterfront, with a fine healthy residential section in the hills, the only place on the coast of China that can be compared to Europe or America. If British, Americans, or others do not care to take up properties in the present city, there is plenty of room along the bay for their own business centres. As the commerce of the port increases a newer and larger harbor will have to be built and greater railway facilities provided, so that there will be ample space for those who prefer to "flock by themselves" even in an international municipality, which by reason of the preponderance of Japanese, may be dominated politically by this element.

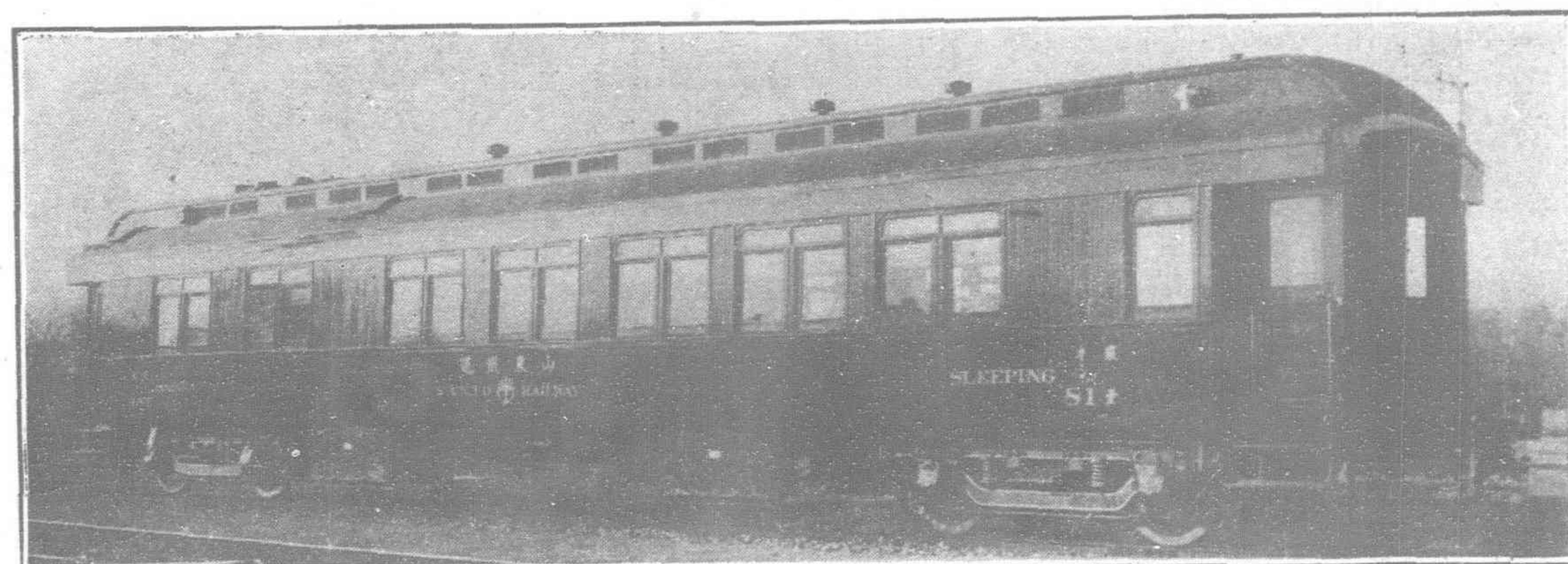
Japan does not want Shantung. She is, however, determined (and properly so) that never again, will her security be menaced by the occupation of Tsingtau as a naval base by any other power. Internationalization of this important harbor would undoubtedly fully meet with Japan's ideas, and the way would then be paved for a full discussion of the many points, involved in the conflict of interests, that would open the door to a great future for Tsingtau.

If Japan concedes something, others should also concede something for the sake of harmony. A little give and take upon all sides would end the interminable international squabble and discord. It would transfer Tsingtau into the real centre of north Chinese

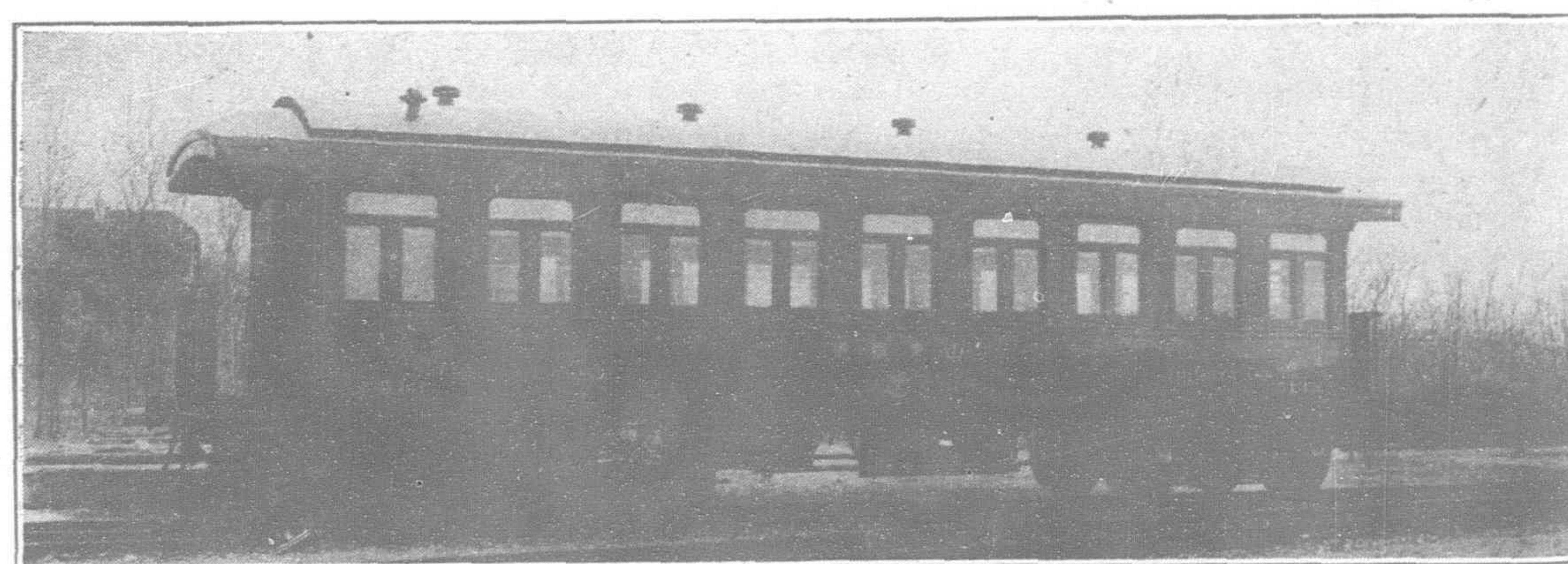
### Rolling Stock in Use on the Shantung Railway



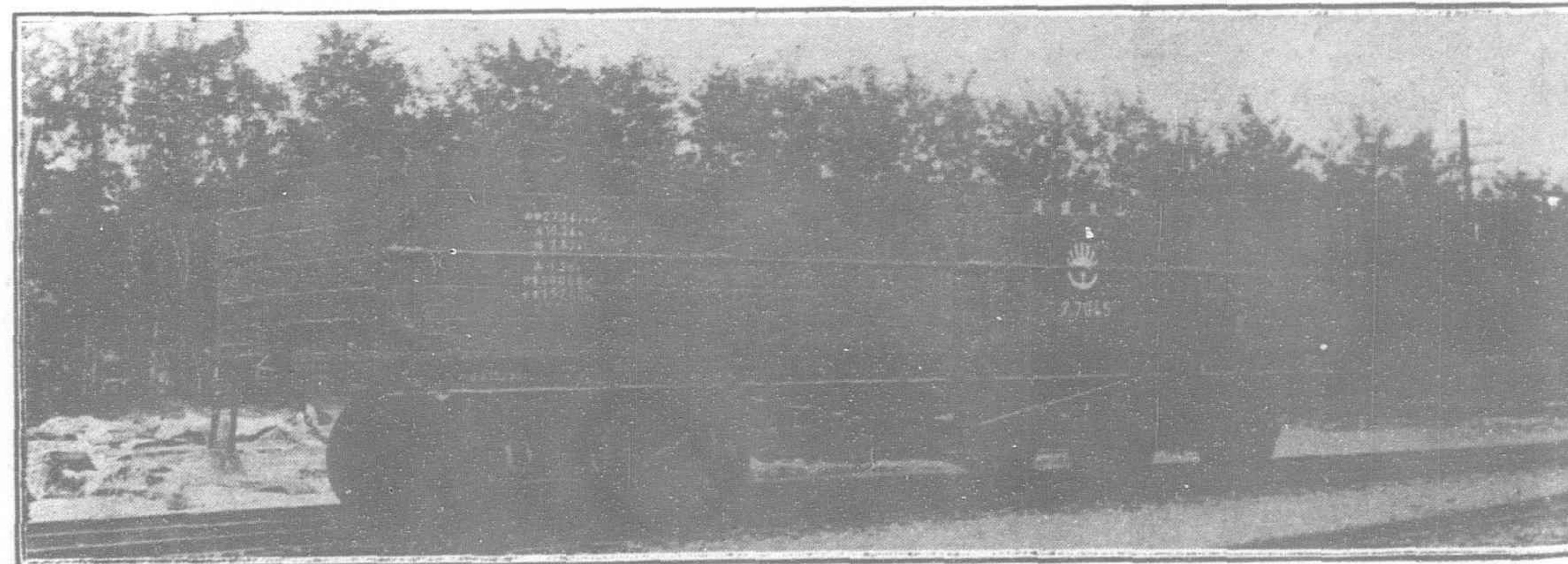
Type of Special Car, built to American Specifications at the Syfang Shops of the Shantung Railway



Type of Combined Pullman Sleeper with Twelve Berths and Pullman Diner, built at the Shakako Shops of the South Manchuria Railway for the Shantung Line

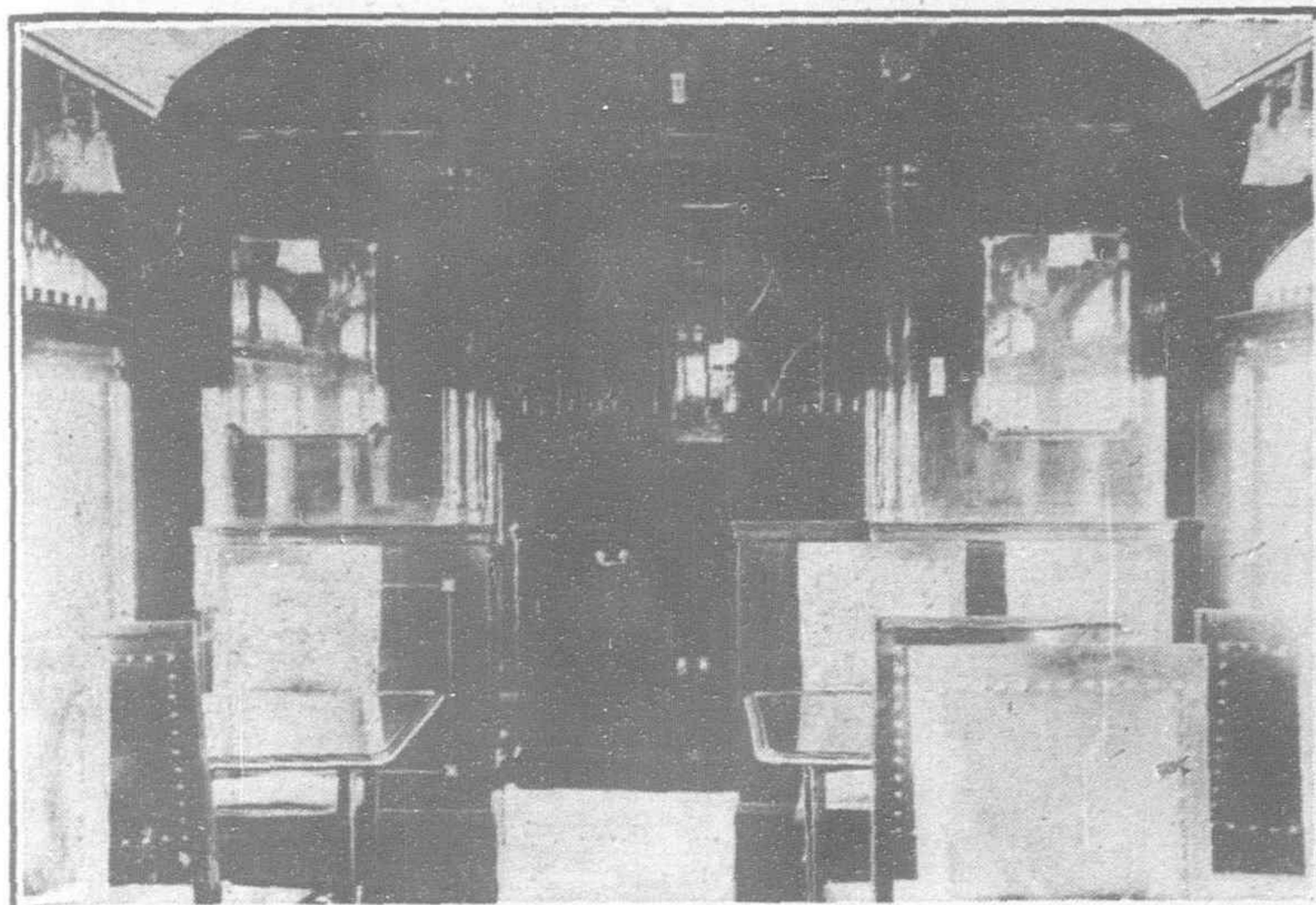


Type of Third-Class Passenger Car, built to American Specification at the Syfang Shops of the Shantung Railway

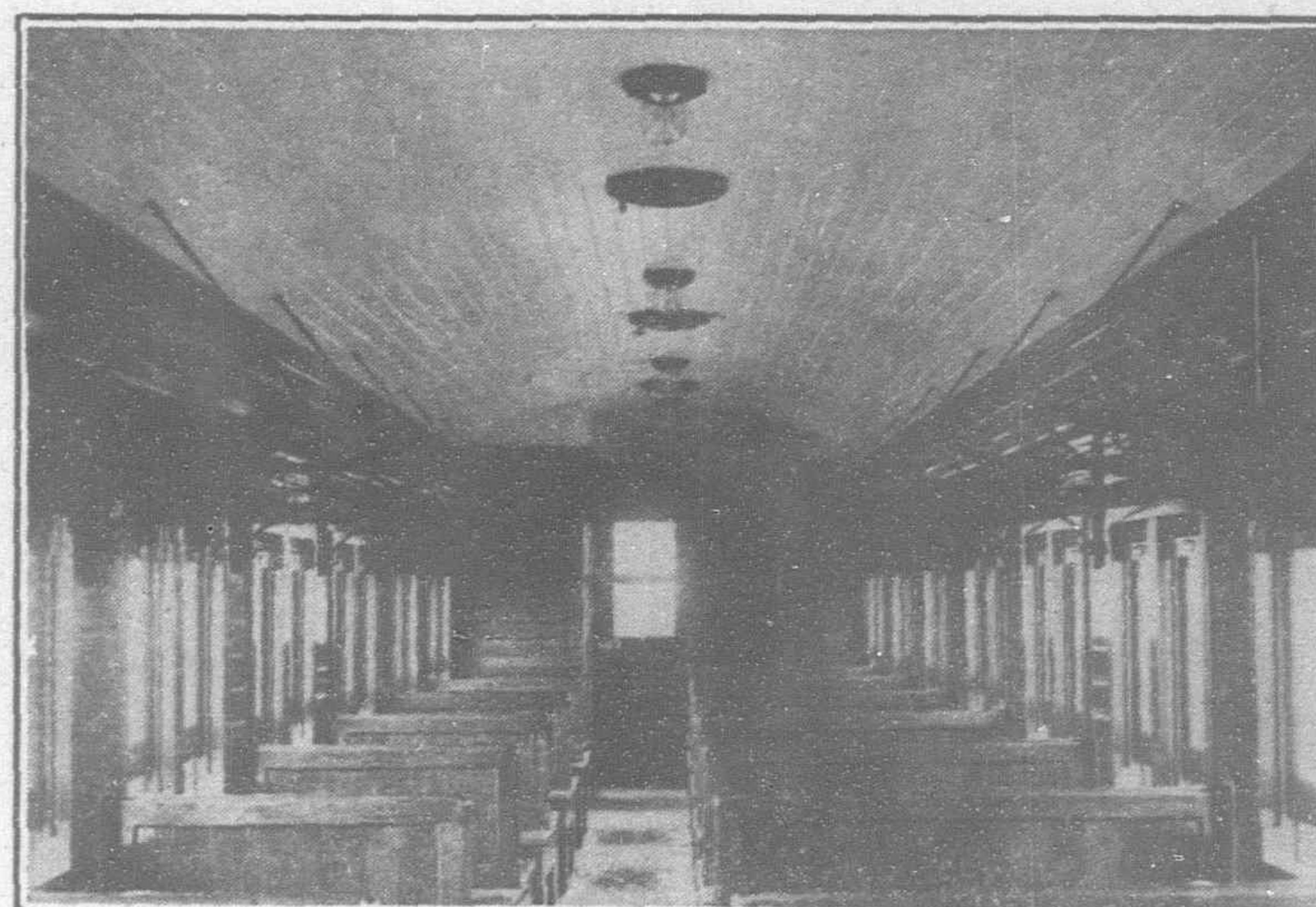


Type of Thirty-Ton Coal Car, built at the Syfang Shops of the Shantung Railway

activity, the deep-water terminal of a system of railways that would reach far into the interior of China, and make the land throb with a new life.



Interior of Pullman type Dining Car, built at the Syfang Shops of the Shantung Railway



Interior of Third-Class Passenger Coach, built at the Syfang Shops of the Shantung Railway

# The Shantung Railway

(JAPANESE NAME, "SANTO RAILWAY")

*The following description of the original German railway is reprinted from the "Shantung Number" of THE FAR EASTERN REVIEW, November, 1914. There is no material change in this data. (Editor)*

**T**HE original capital of the German Company was 54,000,000 Marks, but when it took over the rights and property of the Shantung Mining Company on January 1, 1913, the capital was increased to 60,000,000 Marks, divided into 60,000 shares of 100 Marks each.

The grading for the road-bed began on September 23, 1899, at Tsingtau and Kiaochou. The engineers planned a single track, standard gauge line, and work was carried on in both directions, east and west, some 25,000 laborers being employed. Progress was fairly rapid, the grading of the roadbed presenting few engineering difficulties. For the greater part of its length the line runs through flat country, skirting the foot of the mountains in middle Shantung, and dynamite was only employed in a few places in the German leased territory and in a few cuttings on the western section.

Starting from Tsingtau station, which is eight metres above the sea, the railway crosses several low chains of hills between the larger rivers, and on reaching the water-shed of the Yun-ho, attains a height of eighty-eight metres, gradually ascending as far as the city of Tsing Chow-fu. Wide streams such as the Pai Cha-ho, Schykia-ho, and Taku-ho, are crossed before Kiaochou, at the head of the bay, 74 kilometres from Tsingtau, is reached, and thence to Changling, 128 kilometres from Tsingtau, the line passes through a fertile plain crossing the two rivers, Mischui-ho and Kiau-ho. West of Changling the line reaches the hilly country and passes the ranges in long winding curves to Weihsien, 183 kilometres from Tsingtau. Many rivers rise in this part of the country, two of them being spanned by bridges of nearly 300 metres in length each.

Having reached Tsing Chow-fu the line descends to a height of 40 metres near Chow-tsun, and about 20 kilometres west of that city a chain of mountains running from south to north is crossed, the height reached at Wang-tsun being 158.73 metres above sea level. From this point the line gradually descends to Tsinanfu, where the altitude is but 34.80 metres above sea level.

**BRANCH LINES.**—A branch line, 40 kilometres in length, beginning at Changtien, which is 47.17 metres above sea level, runs in a southerly direction up the Poshan valley, following the course of the Hsiau-fu-ho. The town of Tzechwan, the centre

of the coal mines of the Company, is passed en route and the terminal station is at Poshan, 179.40 metres above the sea.

A branch line seven kilometres in length from Setchwan also connects with the Hungchan coal mines; another branch four kilometres in length joins the main line at Fangtze with the coal mines, while another branch at Tsinanfu, eight kilometres in length, gives connection with the Yellow River. In a short time a new branch seven kilometres long will be open to the iron mines at Chinlin-chen, where work has just been begun.

**LENGTH OF LINE AND GRADIENTS.**—The total length of the main line is 400 kilometres, or 395,373.75 metres, of which there is a level grade of 41.62 per cent. or 164,452.68 metres. The ascending grade from east to west is 29.01 per cent., the descending grade being 29.37 per cent. The straight track totals 299,323.42 metres, or 75.71 per cent., the curves absorbing 24.29 per cent.

The Poshan branch line has a length of 39,200 metres, the level grade being 30.42 per cent., and the ascending grade 69.58 per cent. The straight track totals 27,416.04 metres, or 69.94 per cent., the curves totalling 30.06 per cent.

The steepest grade on the main line is one in 150, and on the Poshan line one in 100. The sharpest curve has a radius of 300 metres.

**ROAD-BED.**—The road-bed is five metres wide, the slope being one in 1.5. In flat country, where floods occur, the slope is one in 2. Excavations are likewise five metres at the bottom. Ditches wide enough to carry the water which runs from the sides of excavations have been made and lined with cement plaster.

**EARTHWORK.**—As far as possible excavations of any considerable depth were avoided owing to the great friability of the soil. No tunnels were necessary.

Embankments are protected against the ravages of heavy rains and floods by heavy stone reinforcements of the base, in addition to which the sides have been protected with sod, and trees such as willows, acacias and alders.

**BALLAST.**—The stone ballast is 4.50 metres wide, and consists either of broken stones (granite or black limestone) or of pebbles, and is at least 35 centimetres thick.

**BRIDGES AND CULVERTS.**—The total number of bridges and culverts along the line is 1,330. Of these 1,150 are iron bridges,

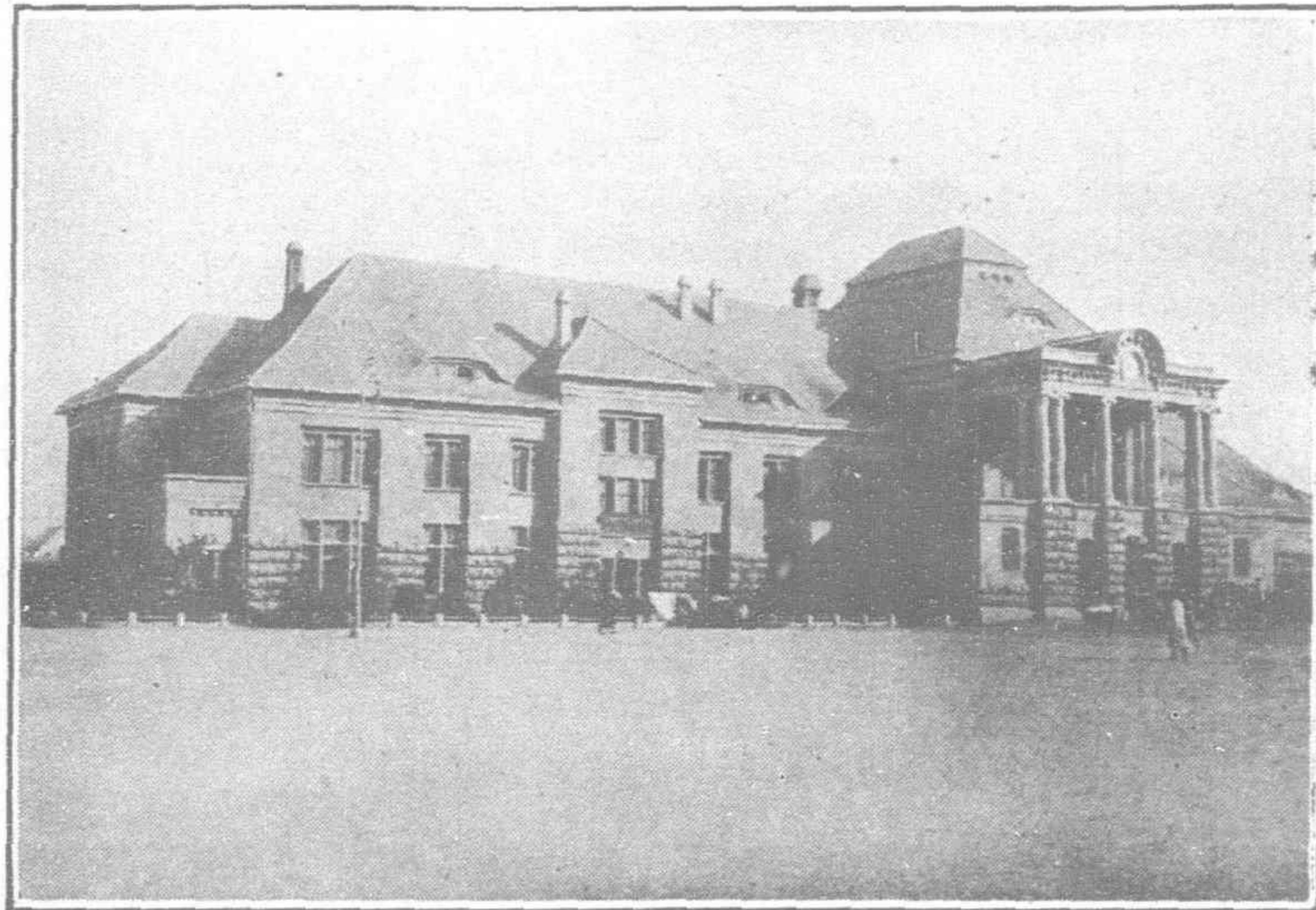
and 280 arch stone culverts. The latter vary in length, the maximum being six metres. The total length of all such culverts on the line is 640 metres.

The spans of the iron bridges vary from one metre to 46 metres, and their total length is 7,700 metres. The longest bridge is over the Tse-ho, 258 kilometres from Tsingtau, the length being 470 metres. The number and dimensions of the bridges more than 50 metres long are as follows: 50 metres to 100 metres, seventeen; 100 metres to 200 metres, three; 200 metres to 300 metres, five; 470 metres, one.

**MASONRY.**—The total mason work on bridges and culverts amounts to 210,000 cubic metres. The foundations of most of the large bridges are laid upon iron piles 12 to 14 metres long. In a few cases the foundations rest upon caissons.

**RAILS AND TIES.**—The normal length of the iron rails is 10 metres, and the weight 300 kg. each. The ties are of steel, weighing 50 kg. each. The material was all bought in Germany. The rails are ten centimetres wide at their base, 5.7 centimetres at their top, and are 12.50 centimetres high. The ties are 2.40 metres long and 8 centimetres high.

**STATIONS.**—There are 55 stations for all kinds of traffic on the main line, and four on the branch line to Poshan. Besides



The Tsinan Station and Railway Hotel of the Shantung Railway

these there are five stations at the end of short branches for receiving cargo only.

The majority of the stations have goods sheds. Some important stations have two, the total number of all sizes being 32. European station masters are in charge at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu West.

**ROUND HOUSES.**—There are 16 round houses, with capacities varying from 4 to 12 locomotives. The round houses at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu are under European control.

**TURN-TABLES.**—There are eight turn-tables with an inside diameter of 17.50 metres each.

**TANK HOUSES.**—There are 20 tank houses with water tanks of from 40 to 80 cubic metres each.

**PLATFORM SCALES.**—There are twelve platform scales of 55 tons capacity each.

**OPENING OF THE LINE.**—The first section of 74 kilometres to Kiaochou was opened for traffic on April 8, 1901, and further sections were put into operation during the same year. On June 1, 1902, the whole of the first half of the line, as far as Weihsien, was opened for freight and passenger traffic, and on June 1, 1904, the whole line, including the Poshan branch, was opened.

**COST OF CONSTRUCTION.**—The railway was five years in con-

struction and the entire cost of construction and equipment was 52,901,266 Marks.

Following are the details:—

Land ...	...	...	...	...	...	£ 89,700
Earthwork ...	...	...	...	...	...	148,000
Level crossing and fences						2,700
Bridges and culverts						728,000
Permanent way ...	...	...	...	...	...	759,000
Signals, blockhouses, etc.						13,200
Stations ...	...	...	...	...	...	106,000
Repairing-shops, etc.						85,000
Materials (coals, etc.)						310,000
Administrative expenses						203,000
Interest on capital, etc.						200,000

Total ... ... ... ... £ 2,644,600

or, including interest on capital, about £9,200 per mile.

The longitudinal section of the road shows that the main line is made up of forty-two per cent. level, twenty-nine per cent. rise, and twenty-nine per cent. fall, with a maximum grade of six per cent. The permanent way has been constructed to sustain ordinary traffic at a speed not exceeding 37.5 miles per hour.

The survey covered in area a strip of land varying in breadth between 500 and 2,000 yards, and cost about £36 per mile, being completed at the rate of ten miles per month. The land was expropriated in accordance with Chinese law, 1s. 1d. being paid per square yard, with a surcharge of eight per cent. for land in crop and near the townships. The earthwork was sublet in contracts of six miles in length, and was paid for at schedule prices, 1s. 4d. per cubic yard for ordinary earthwork, and 10d. per cubic yard for rock. All bridges and culverts were standardized, as well as the wooden and steel scaffoldings used for erection.

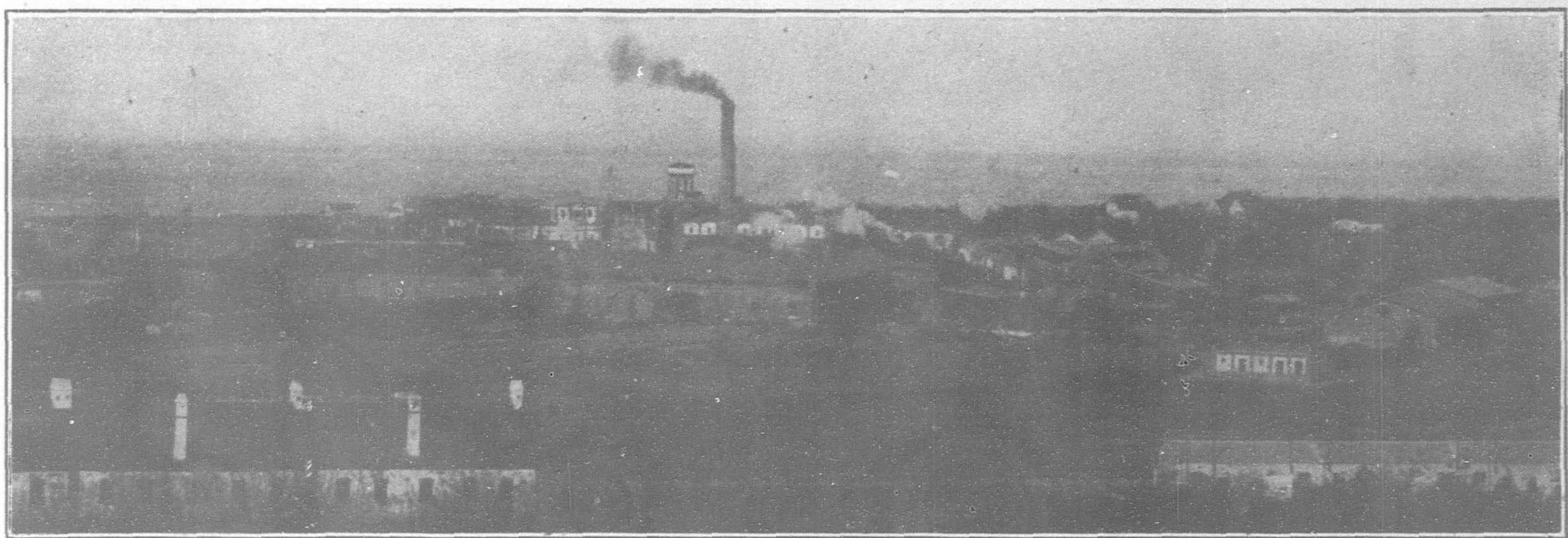
### The Shantung Railway, 1921

The above general description of the line still holds good. The best reference to the railway and its work since the above was published was written by U. S. Trade Commissioner Frank Rhea, in his Special Report on Far Eastern Railways published by the department of commerce in 1917. As will be seen from the following notes on the present equipment of the line, the tendency of the Japanese is to replace the old German material by the products of American factories. This is in evidence very strongly in the new rolling stock. Twenty-six new consolidation engines have been purchased from America in the last four years. Other car materials to the extent of 2,278,237 silver yen, or on the neighborhood of \$1,500,000 gold, has been bought. As will be noted, the total amount of purchases from America aggregate \$3,046,468 from 1916 to 1920, about one-third of the total material expenditure during the period. *The budget for 1921 calls for the purchase of an additional 18 locomotives, 293 thirty-ton coal cars, 11 passenger coaches and 12 cabooses.*

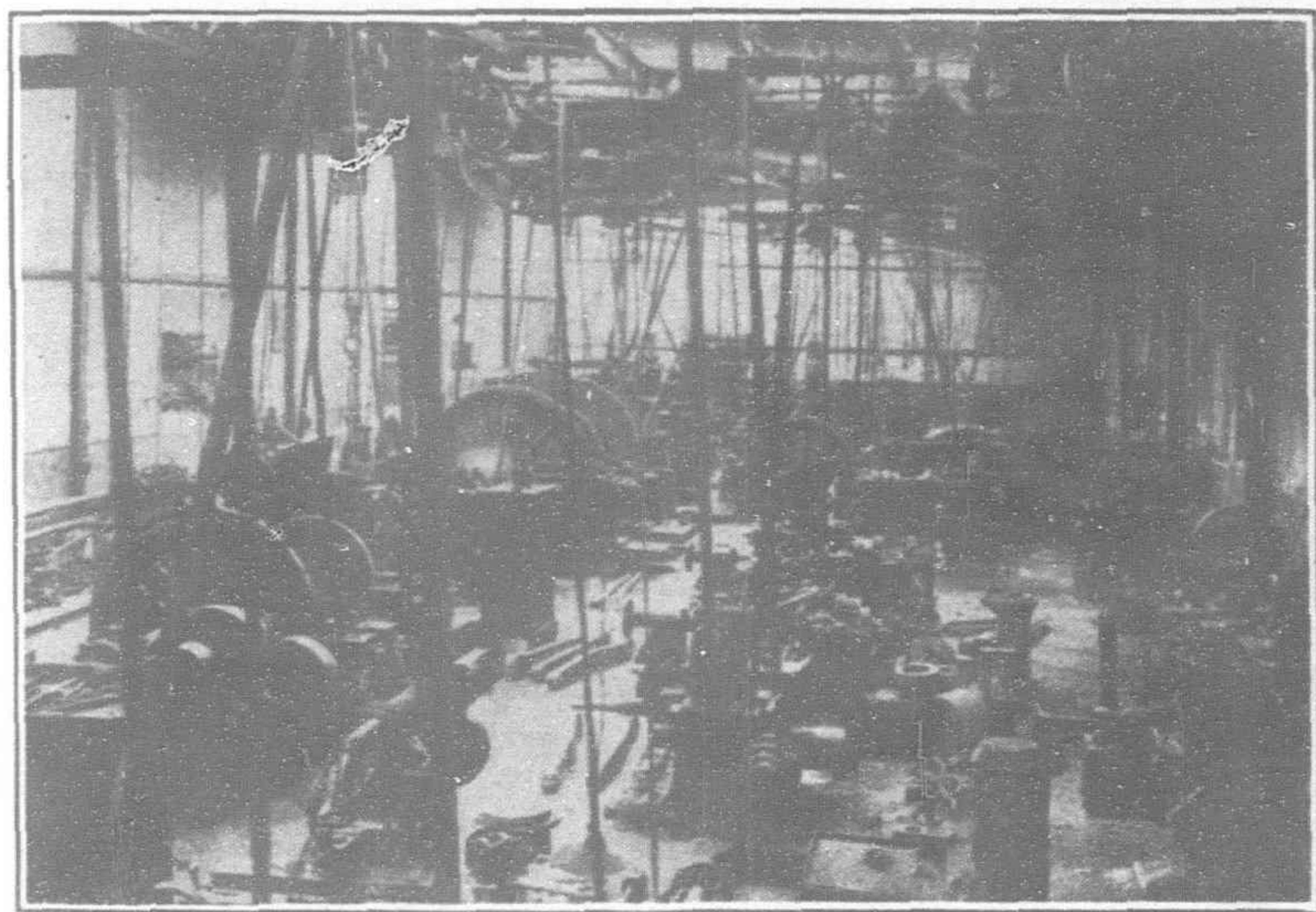
### Anti-Japanese Propaganda Destroying American Markets

It is expected that most, if not all, of this material will be purchased from American manufacturers. There is, however, a growing feeling of irritation scarcely perceptible perhaps, but nevertheless existing, that American manufacturers who have derived the largest benefits from Japanese management of railways in China, should be so easily influenced against Japan in political matters by their agents in China. This new development of international trade rivalry in China, led largely by concerns whose business is openly admitted as having been built up on an anti-Japanese basis, is bound to have its effect upon Japanese purchases in America and in other places, unless these practices are terminated. American manufacturers who permit themselves to be drawn into the maelstrom of Far Eastern partisan politics by their China representatives, must, in time, expect to see their business in Japan undermined and handed over to com-

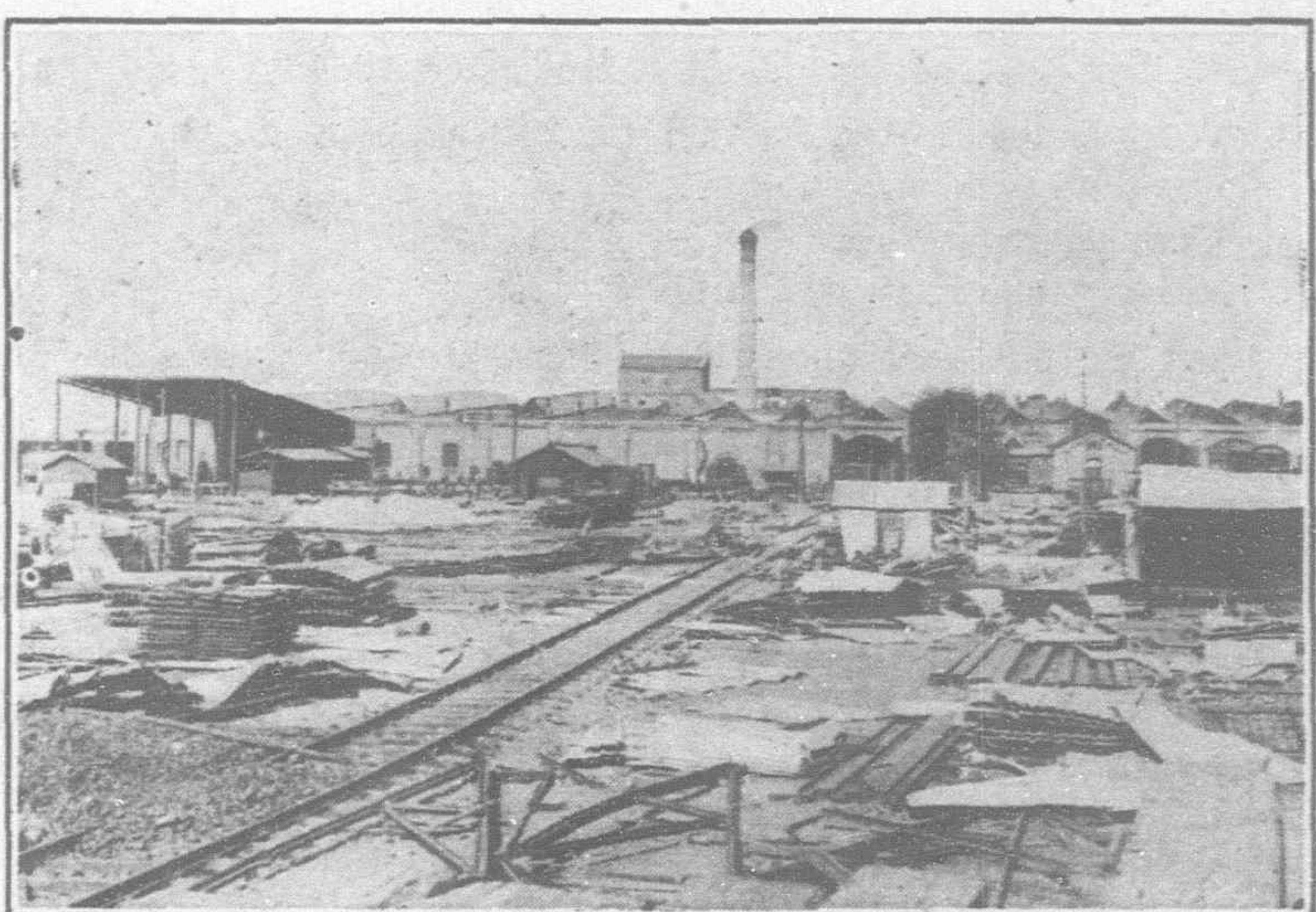
## THE SYFANG SHOPS OF THE SHANTUNG RAILWAY



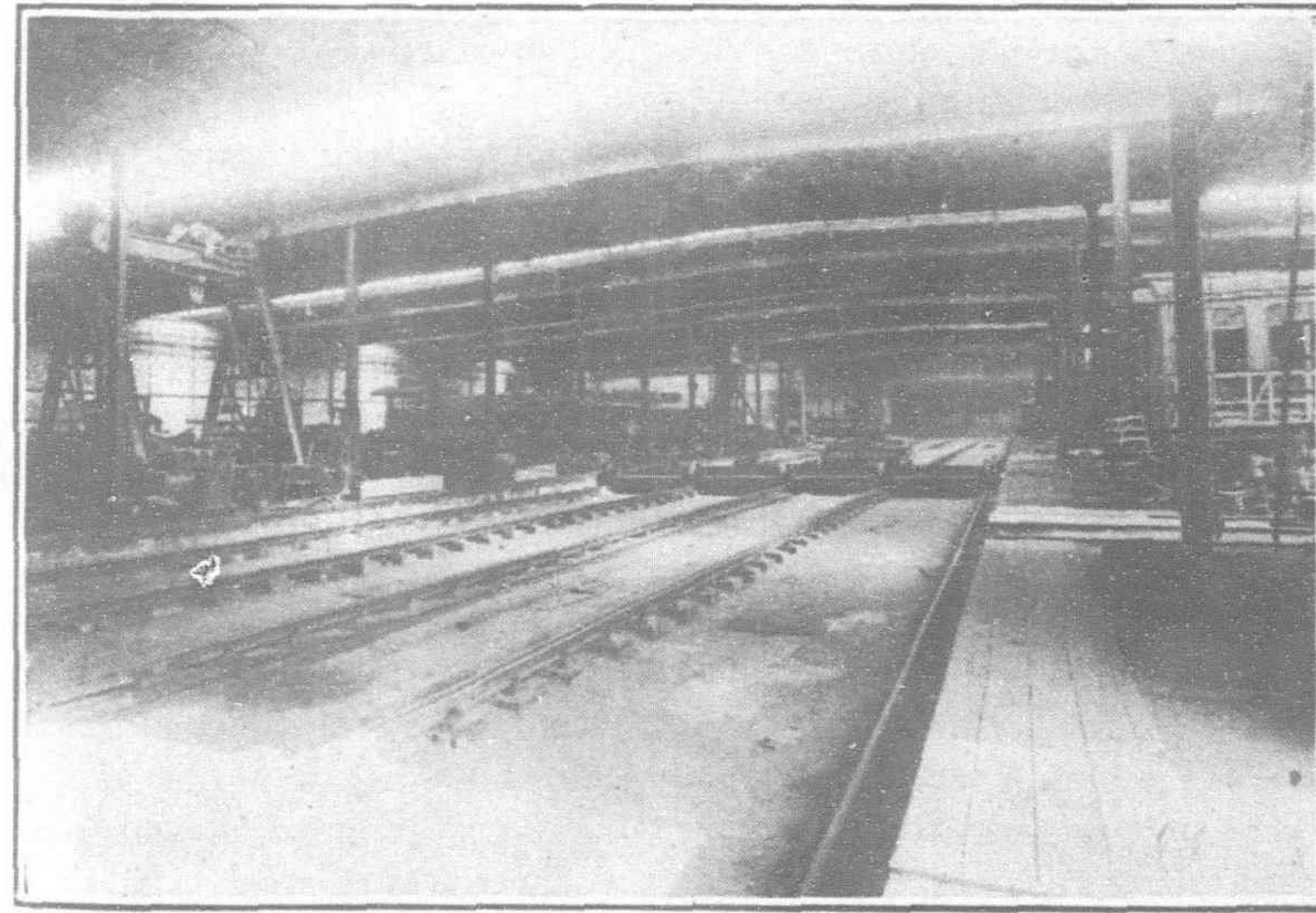
GENERAL VIEW OF THE SYFANG SHOPS



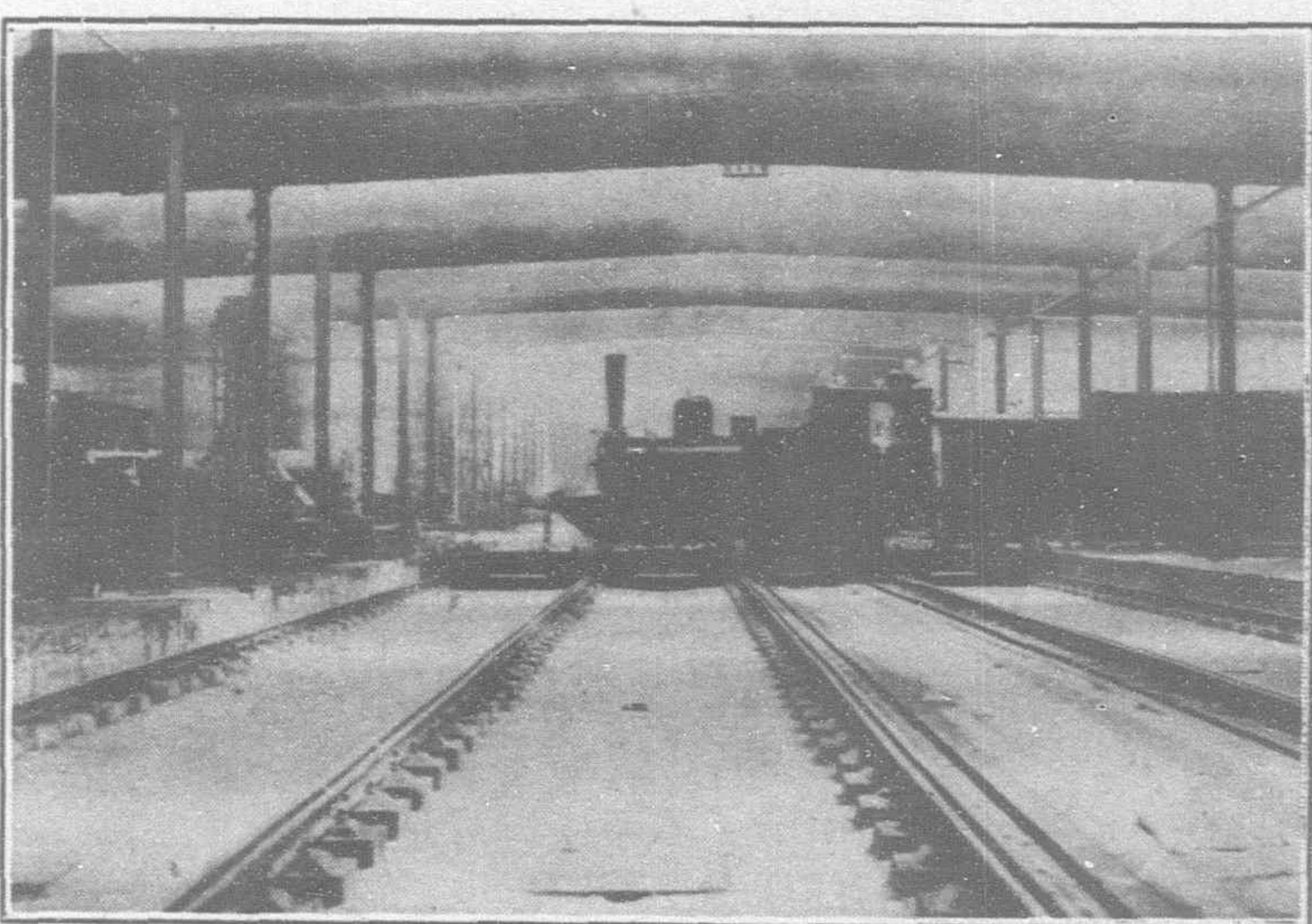
Interior of Machine Shop



The Material Yard of the Shops



Views in the Locomotive Shops, showing Transfer Table



petitors. For the time being, and for the reason that European manufacturers of railway supplies cannot compete in the matter of deliveries with Americans, these orders from Japan will undoubtedly continue to be placed in the United States, amongst manufacturers taking no part in these political movements. There is, however, strong evidence that Europeans are taking full advantage

of the opening presented by this anti-Japanese agitation encouraged by Americans in China, and are pressing the Japanese for such share of the orders as they can at present supply.

The following data on the present equipment and operation of the Shantung Railway is up-to-date, and the most important items extracted from the report of the civil administration dated



Poplar Forest Planted by the Railway Administration at Lungshan Station



The Station at Changtien, where the Branch to the Tsuchuan Mines and Poshan joins the Main Line

November 30, 1920, forwarded to Tokyo, for presentation to the Diet:—

#### Budget of the Civil Administration, 1921

Total Revenue	...	...	Gold Yen	23,513,255
" Expenditures	...	...	"	23,513,255
Extraordinary Expenses	...	...	"	8,110,846
Maintenance Expenses	...	...	"	15,402,409

#### COMPARISON WITH 1920 BUDGET

	1921 Budget	1920 Budget
Revenue	...	23,513,255
Shantung Railway	...	21,255,602
Various Works at Tsingtau	2,257,653	1,624,045
Expenditure	...	23,513,255
Civil Administration	...	2,359,258
Railway	19,485,887	15,946,923
Communication Dept.	1,668,110	1,147,976

#### REVENUE

	1921	1920
Total	23,513,255	20,138,771
Railway...	21,255,602	18,514,726
Passengers	3,128,650	2,775,037
Freight	8,335,687	7,427,850
Warehouse	149,100	105,150
Coal	5,214,750	4,120,741
Railway	2,025,000	2,400,000
Wharf	1,517,637	1,201,860
Miscellaneous	309,681	180,631
Hospital	75,097	107,277
Different Works at Tsingtau...	2,257,653	1,634,045
Electric	628,589	545,008
Postal	1,026,827	637,131
Stamps	3,835	2,274
Abattoir	259,509	270,778
Waterworks	313,450	186,808
Forestry	25,443	22,046

#### Shantung Railway Notes

ROLLING STOCK.—*Locomotives*.—No. in 1913, 41; in 1919, 79.

In the six years that the line has been operated by the Japanese the number of locomotives has been doubled. The number and types of locomotives follow:

Type	6 Coupled	8 Coupled	10 Wheeler	Mogul	8 Coupled	Consolidation				
Symbol	S	R	T	T-1	T-2	M	E	C	C-1	C-2
Number	9	7	17	6	7	4	3	7	15	4

NEW LOCOMOTIVES.—From 1913 to 1915, no new locomotives were purchased. In 1916, three consolidation engines were ordered from the American Locomotive Company. In 1918 four more

of the same type were bought from the same company. In 1919, two six-coupled and one ten-wheeled German type locomotives were built at the Syfang Shops, four consolidations were ordered from the Baldwin Locomotive Works, and five more of the same type from the American Locomotive Works, a total of twelve new engines for the year. In 1920, ten more consolidations engines were ordered from the American Locomotive Works. Tenders for 15 locomotives are expected to be ready by April, 1921.

PASSENGER CARS.—The passenger car equipment shows little increase over the total of the German figures for 1913, although many of the old German cars have been scrapped and superseded by others that conform to American practice. The present equipment consists of 122 cars as against 110 for 1913. Private saloon car, 1; special car, 5; combination sleeper and diner, Pullman style, 6; dining cars, 2; 1st and 2nd class passenger coaches, 14; 2nd class passenger coaches, 5; 2nd and 3rd class passenger coaches, 8; 3rd class passenger coaches, 72; baggage cars, 2; baggage and mail cars, 4; mail cars, 3; Total, 122. Exterior and interior views of these cars are seen on pages 90, 91. The combination sleeper and dining car is built to the Pullman pattern, and fitted with the most up-to-date appliances, toilet, wash room, etc. These were built at the Shakako Works of the South Manchuria Railway. The balance of the passenger and freight cars have been assembled and built at the Syfang Shops.

FREIGHT AND SPECIAL SERVICE CARS.—Under German control of the line, the report for 1913 returned 1,051 freight and special service cars. These have been increased to 1,416 under Japanese management. The greatest increase is in the covered or box cars, whose number in 1913 was 283, and in 1920, 361. The number of coal cars in 1913 was 557, and in 1920, 708. The present equipment consists of:—box cars, 361; gondola cars, 34; timber cars, 100; coal cars, 708; ore cars, 50; coke cars, 75; lime cars, 20; stoke cars, 1; fish cars, 3; tank cars, 13; cabooses, 46; tool cars, 4; weigh bridge calibrating car, 1. Total, 1,416.

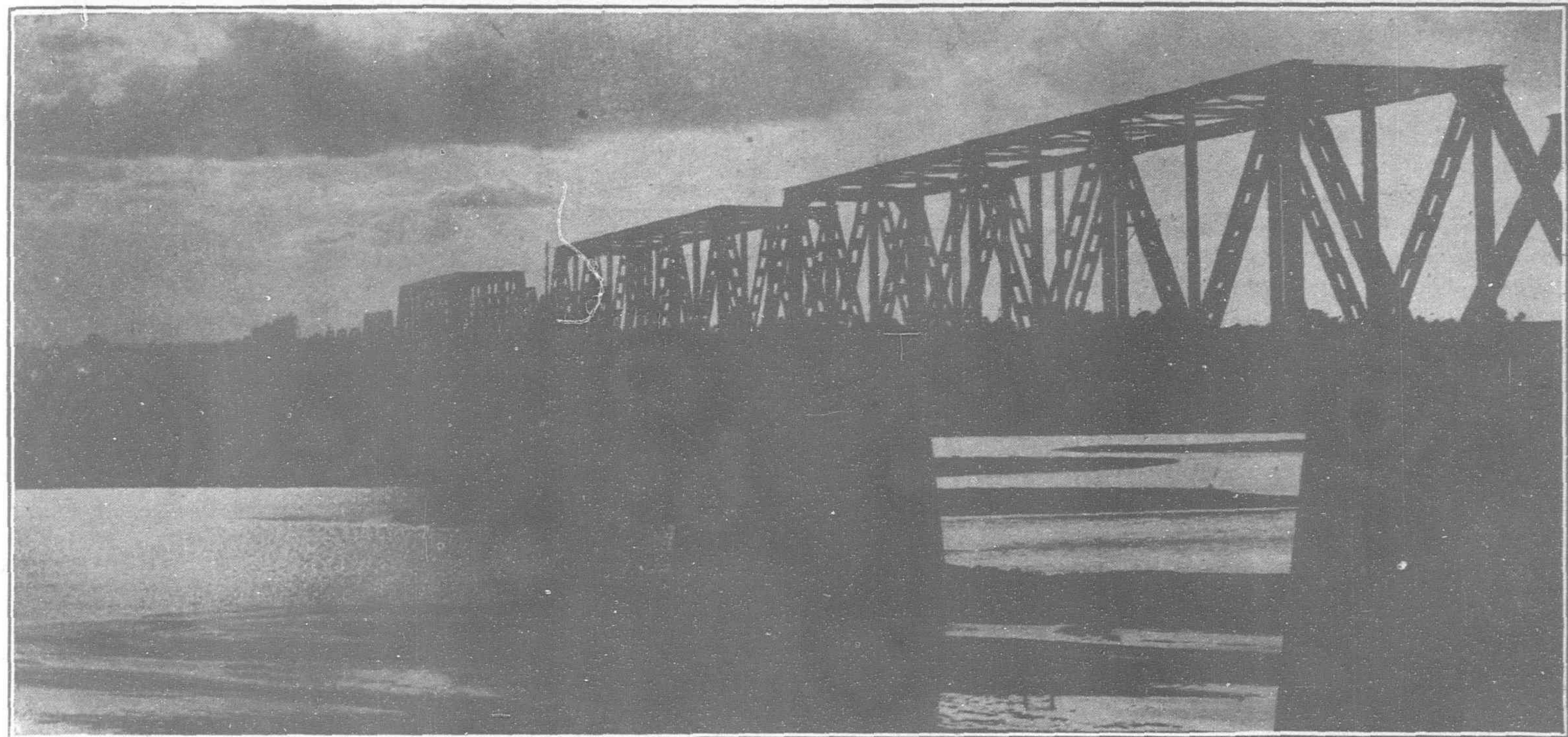
PURCHASES OF MATERIALS.—The purchase of materials for the Shantung railway is under the bureau of finance of the railway administration, and as a rule is made by public tender, or by purchase in the open market from manufacturer's representatives having offices in Tsingtau. The customs reports have no record of imports of railway materials, as the railway being a government concern for the present, pays no duty under the provisions of the German treaty. Considerable purchases have been made in Japan especially from the Japanese Government Steel Works at Yawata, to which the railway is under contract to supply about 150,000 tons of iron ore, f.o.b. Tsingtau annually. Since 1916, the railway authorities have purchased materials to the total value of 15,418,839 in silver yen. The value of the silver yen has varied greatly with the fluctuations of the metal, but it is fair to strike an average of .66 gold for the period under

survey, or a conversion into gold of approximately \$10,397,226. The actual cost of construction of the railway was given in the German official report as 2,644,600 pounds sterling, or, about \$13,000,000 gold.

**PURCHASES FROM THE UNITED STATES.**—As in the case of the Japanese operated South Manchuria Railway, the management of the Shantung line has purchased about one-third of its total materials from American manufacturers. The following official

that standardization of the line along American principles is fully appreciated.

**WORKSHOPS AND EQUIPMENT.**—The main workshops of the Shantung Railway are located at Syfang, a short distance from the Tsingtau terminal. Originally of moderate size to meet the requirements of the German line, the shops have been considerably enlarged under Japanese management. During 1920, an iron and brass foundry was added. A few locomotives have been completely



Railway Bridge over the Taku-ho, at Kilometer 114, length 272 meters. The centre span of this Bridge was carried away by a flood in 1917. The Repairing and Strengthening of this Bridge is the only important Work of the kind carried out under Japanese Management of the Railway

statement will show how these American purchases have been distributed during the five years ending 1920:—

				Silver Yen
Steel and Iron	...	...	...	592,199.737
Lumber,	...	...	...	124,536.468
Special Brick	...	...	...	14,166.920
Paints	...	...	...	32,548.012
Office Furniture	...	...	...	26,842.116
Machine Tools	...	...	...	399,384.780
Rails, Points, etc.	...	...	...	199,525.517
Rolling Stock	...	...	...	2,278,237.226
Cast and Rolled Pipes, Fittings	...	...	...	141,707.648
Electrical Materials	...	...	...	28,603.885
Bolts, Nuts, Rivets	...	...	...	18,680.505
Oils	...	...	...	461,881.995
Building Materials	...	...	...	14,387.949
Stationery	...	...	...	12,613.178
Miscellaneous	...	...	...	224,587.363
<b>Total</b>	...	...	...	<b>4,569,703.229</b>

or, at the same rate of exchange (.66 $\frac{2}{3}$ ) about \$3,046,468 gold.

Under German direction, American and other European manufacturers supplied nothing, not even a nail, to the Shantung Railway. The Japanese have opened the door to American materials and converted the line into one on which American specifications and practice predominate. Westinghouse air brakes have completely supplanted the old German equipment, American boiler tubes, Worthington pumps, car-heating and lighting apparatus, couplers, etc., are found on all the cars. Riding in a comfortable Pullman, one sees rows of American locomotives sticking their heads out of the round houses as the train passes through divisional headquarters. It is not, however, until the workshops have been visited,

constructed at these works, and all the cars are now made here. About 10 freight cars per month are built at the shops, wheels, axles and fittings coming from America. In 1920, the shops built 10 first and second-class passenger cars and 150 freight cars. A typical 30-ton coal car and special car turned out at the works are illustrated on page 89. The equipment of the workshops is largely American, and the extent of the purchases from 1916 to 1920 can be seen from the following official memorandum:—

Year	Machine Tools, etc.	Materials	Total
1916	...	9,603.200	59,527.780
1917	...	31,026.560	—
1918	...	34,685.070	145,824.090
1919	...	123,100.710	71,813.380
<b>Totals</b>	<b>198,415.540</b>	<b>276,465.180</b>	<b>474,880.720</b>

The above figures are in silver yen, and at an exchange of .666, the total is equivalent to \$316,586 gold.

The purchases for 1920 amount to 222,236.99 in gold yen, for machine tools, and 467,178.60 gold yen for materials, a total of G.Yen 689,415.59, or \$394,707, a grand total of \$661,293, expended in five years for American machine tools and materials.

Some of the more important machine tool purchases are enumerated below with their prices in silver or gold yen.

1916. One 20-in. drilling machine, Y.1,232; one 4-ft. 6-in. radial drill, 1,844; one vertical screw power testing machine, 4,305 (silver yen).

1917. One Harty flue welding machine, 2,340; one screwing machine, 3,250; one bolt and rivet making machine, 9,899; one half-ton air hammer, 8,856; one air compressor (silver yen).

1918. Three pneumatic drills, 2,480; dies and headers, 2,419;

all geared drilling machine, 2,234; universal radial drilling machine, 2,239; universal milling machine, 5,427; one steam hammer, 17,455 (silver yen).

1919. One reversible motor drill, 1,918; 30-ton locomotive crane, 57,630; one all geared drill, 3,207; wheel lathe, 16,354; Fosdick radial drill, 3,988; Harkness flat turret lathe, 4,515; 24-in. back geared shaper, 2,294; 16-in. crank shaper, 2,730; all geared 24-in. drill, 1,975; universal milling machine, 3,950; 3-ft. high speed plane radial drill, 2,495; Sibley sliding head drill, 28-in. 2,500; Barnes 34-in. sliding head drill, 1,075; Ryerson slotting machine, 8,234; 6-in. Davis high speed cutting off machine, 2,940; Landis boly cutter, 1,495; etc. (silver yen).

1920. Prices in gold yen. One link grinding machine, 19,970; gap grinding machine, 12,000; boring and turning mill, 15,800; guide bar grinding machine, 17,000; air compressor, 30,000; air receiver, 3,365; electric drill motor, 3,834; 79-in. heavy driving wheel lathe, 45,700; cylinder boring and facing machine, 50,600; Ansonia friction testing machine, 8,060; motor, 2,850; electric arc welding machine, 8,470; universal flue cleaning machine, 2,529.

**TRACK MATERIALS, AND BRIDGES.**—The Germans laid the line with a specially designed rail weighing about 60 pounds but with a head and girder strength equivalent to 70 pounds American standard. A considerable stock of rails and joints were left by the Germans, which have been utilized by the Japanese in repairing the line when necessary. Wherever they have had occasion to purchase new rails for the short extensions and special work, they have used a 70 pound rail, which, I understand, has been furnished by the Japanese Government Steel Works at Yawata. The practice of replacing the old rail with the heavier one will be carried until the line is entirely laid with the 70-lb. rail. There has been some talk of double tracking the line, but conditions do not as yet warrant such an expense, at least, not until further extensions towards the west are carried out. The rails are laid in steel ties of German design which have given excellent results, but the Japanese are replacing these gradually with wooden sleepers.

The uncertainty as to the future status of the line arising out of the delay in arriving at a settlement of the Shantung question, has contributed to postpone any radical improvements which must be carried out before the railway can fulfill its legitimate function in developing the province. The rapidly increasing volume of freight can be economically hauled only by the use of heavier trains and locomotives, but here the Japanese management are confronted by the lightness of the bridges designed for loading not in excess of Cooper E-35. The total number of bridges and culverts along the line is 1,330. Of these 1,150 are of steel. The spans of these bridges vary from one meter to 46 meters, and their total length is 7,700 meters. The longest bridge is over the Tse-ho, 470 meters. The number and dimensions of the bridges over 50 meters long are as follows:—50 to 100 meters, seventeen; 100 to 200 meters, three; 200 to 300 meters, five; 470 meters, one.

In 1912, the total volume of freight carried was only 717,189 tons. In 1920 this had increased to 1,733,375 tons, about 150 per cent. In order to handle the constantly increasing traffic which must come from the development of the coal and iron mines, the Japanese are desirous of replacing the light bridges with heavier structures in order to increase the size and weight of locomotives and trains. This important work, however, cannot be undertaken until the political questions are settled and a final agreement reached as to the future ownership and management of the railway and mines.

Under these conditions, no new bridge work has been carried out under the Japanese management, except in the few cases where it has been necessary to replace those destroyed by the Germans in 1914, and the few spans carried away by flood action. In this connection, the only important piece of work has been the reconstruction of the bridge at Km. 144 over the Taku-ho, the central pier of which gave way under a heavy flood. The bridge has been greatly strengthened in the rebuilding.

### Passenger and Freight Receipts

No. of Passengers	Receipts	Year ending Nov. 1919		Year ending Nov. 1920	
		S. Yen 1,467,573	2,550,050 tons	S. Yen 1,994,271	
2,145,152		1,654 tons	52,902	1,516	54,892
946,412	„	„	3,449,140	1,031,363	„ 3,758,996
732,700	„	—	—	826,785	—
43,446	„	—	—	—	41,524
1,679,112	„	—	—	1,858,148	—
—	„	—	5,013,461	—	5,849,683
—	„	—	669,964	—	706,246
—	„	—	68,293	—	91,714
<hr/>					

### Output of Mines

1919	1920
425,106 tons	Szechuan Coal Mines 504,250 tons
54,687 „	Fangtse Coal Mines 120,551 „
479,793 „	Total Coal Output 624,801 „
114,751 „	Chinglingchen Iron Mines 122,935 „
<hr/>	
TOTAL REVENUE AND EXPENSES OF RAILWAY DEPARTMENT	
Year ending Nov. 1919	Rev. G.Y. 11,729,070
1920	Exp. G.Y. 15,220,823
„	17,419,584
<hr/>	

RECEIPTS.—The receipts for 1919-1920 are classified as follows:

	1919	1920
	(Gold Yen)	(Gold Yen)
Passenger	2,709,481	3,666,568
Freight	5,790,998	6,374,109
Miscellaneous	229,562	325,405
Coal Sales	1,734,834	3,407,913
Wharf Receipts	1,176,721	1,197,705
Warehouse receipts	88,272	219,501
Iron Ore	—	1,947,637
Total	11,729,070	17,338,839
<hr/>		

### RAILWAY EXPENSES.

	Year ending	
	Nov. 1919	Nov. 1920
Extraordinary Budget 1914	... 15,220,823	14,438,791
Salaries and Wages:—		
Officials	527,525	507,979
Employees	335,519	312,036
Laborers	161,199	158,540
Bonuses and allowances	100,753	216,899
Temporary allowances (equalization of ex- change)	432,982	747,276
Travelling expenses	30,005	37,402
Clothing and uniforms	8,024	7,457
Postage	1,587	1,282
Stock Feed	695	2,361
Medical	—	27,697
Materials	1,190,188	1,596,044
Other purchases	228,455	348,361
Maintenance	319,924	374,650
Rolling Stock	585,651	730,014
Operating	6,528,724	5,925,060
Miscellaneous	46,249	104,225
Refunds	980	442
Mining Department	4,097,947	4,625,800
Chinkingchen Iron Mines	2,187,766	819,288
Sszechuan Coal Mine Equipment	152,313	—

There is a supplementary or Part 2 to the expenditures for the communication department of the civil administration up to

September 1920, which has not been translated in time for this article.

### Organization and Management

The management of the railway is directly under the civil administration of the Tsingtau government. On October 1, 1917, a new set of regulations for the management of the line was promulgated, which, according to other competent authorities, is very complete and comprehensive. Trade Commissioner Frank Rhea, whose splendid report on Chinese railways was issued by the Department of Commerce in 1919, remarks concerning these regulations, as follows :

"Two points that merit particular attention are, first, the inclusion of the mining operations under the direction of the railway department ; and, second, the provision of a "bureau of traffic control." This latter represents a partial step toward the commercializing of the railway, but, as this bureau also has charge of the station-operating forces, it is not a distinctly separate branch, like the traffic department of our American railways. This organization, like that of the South Manchuria Railways, shows the careful and painstaking arrangements that the Japanese have taken to insure success." The following is a translation of the Japanese text of the ordinance of October 1, 1917, putting into effect these regulations :

ARTICLE I.—The following five bureaus shall be established in the railway department of the department of civil administration in the Tsingtau army headquarters and a chief shall be appointed in each bureau : bureau of general affairs ; traffic control ; operation ; engineering ; finance.

ART. II.—The bureau chiefs shall be appointed from railway secretaries or railway engineers, and they shall control their respective affairs, supervising their staffs under the direction of the director of the railway department.

ART. III.—The bureau of general affairs shall have charge of the following business : (1) Confidential matters ; (2) personnel ; (3) correspondence, compilation of rules, etc. ; (4) investigations and statistics ; (5) assignment of quarters ; (6) training of employees ; (7) leasing of houses and lands ; (8) all matters not included in the functions of other bureaus.

ART. IV.—The bureau of traffic control shall have charge of

the following business : (1) Traffic on the railways ; (2) distribution of cars ; (3) warehousing.

ART. V.—The bureau of operation shall have charge of the following business : (1) Operation of trains ; (2) correspondence relating to operation ; signaling ; and conduct of railway.

ART. VI.—The bureau of engineering shall have charge of the following business : (1) New construction and repairs, railway, and buildings ; (2) operation of electric power houses for railway purposes ; (3) control of lands and buildings in railway use.

ART. VII.—The bureau of finance shall have charge of the following business : (1) Preparation of the budget and the settlement of accounts ; (2) receipt and disbursement of cash and properties and custody thereof ; (3) purchases of materials and disbursements in connection therewith ; (4) inventories of properties.

ART. VIII.—The wharf office shall be established within the railway department and shall have charge of the docking and clearing of vessels, the loading and unloading of cargo, and control of the wharves and properties connected therewith.

ART. IX.—A workshop shall be established in the railway department and shall have charge of the designing of rolling stock and machinery and the construction and repairing thereof.

ART. X.—The bureau of mines shall be established within the railway department. It shall be composed of three sections : (1) business, (2) excavation, and (3) sale, which shall have charge of such matters as underground work in the mines, allied manufacturing industries, sale of products, and control of the properties.

ART. XI.—The details of the organization and operation of the different bureaus, the wharf office, the workshop, and the bureau of mines shall be determined by the director of the railway department with the sanction of the commander-in-chief of the Tsingtau garrison.

At the present time there are 9,362 employees on the salary list in addition to 3,954 Chinese and 1,128 Japanese day laborers.

*Proposed Rebate System.*—In order to promote the industrial development of Tsingtau, a proposition has been submitted to the Japanese Diet, for the approval of freight rebates on certain raw products destined for factories located within the Leased Territory. Rebates are also proposed for summer shipments of coal and coke from the mines to the sea port, in order to stimulate production during the slack season and obviate the rush for cars during the winter. Wheat and flour also come within this new project.

## Shantung Coal and Iron Mines

### The Fangtze Group

#### I.—The Wei-hsien Coal Fields

HE coal fields of Wei-hsien are remarkable for the irregularity in the distribution of its coal seams ; and the preliminary boring trials indicated that the whole of the surrounding country was at one time the scene of violent volcanic eruptions, which so disturbed the coal deposits that nearly a whole year was lost by the mining engineers in finding a continuous seam.

The theory advanced to account for the pockets of coal embedded in the granite which were discovered and exploited by the Chinese is that the action of water on the uneven surface of the subsidiary bed of granite caused deposits of coal-forming vegetable matter in the crevices, where they could not be washed away, leaving the upper surface of the granite bare. The remains of the Chinese shafts are distributed in small clusters where these pockets are found, and are separated from each by the out-cropping granite. As the Chinese miner cannot go deeper than 180 feet, on account of his inability to cope with the increasing volume of water which

has to be removed to permit of work being carried on, it is not known how deep these pockets are. Their lateral area is, however, so small that the Chinese have practically ceased to mine them ; and as they were valueless as mines worked under modern principles, the engineers turned their attention to other places where coal had not been found on the surface. After boring for a year, during which only granite and volcanic tufa were found, they struck a seam of coal about 9 feet thick, at a depth of 450 feet, running from north-east to south-west. A shaft was sunk, and mining operations commenced. The Wei-hsien coal is bituminous containing about 30 per cent. of gas ; it burns with a clear flame, and does not cake like the Japanese coal, and it has also the advantage of having a lighter smoke.

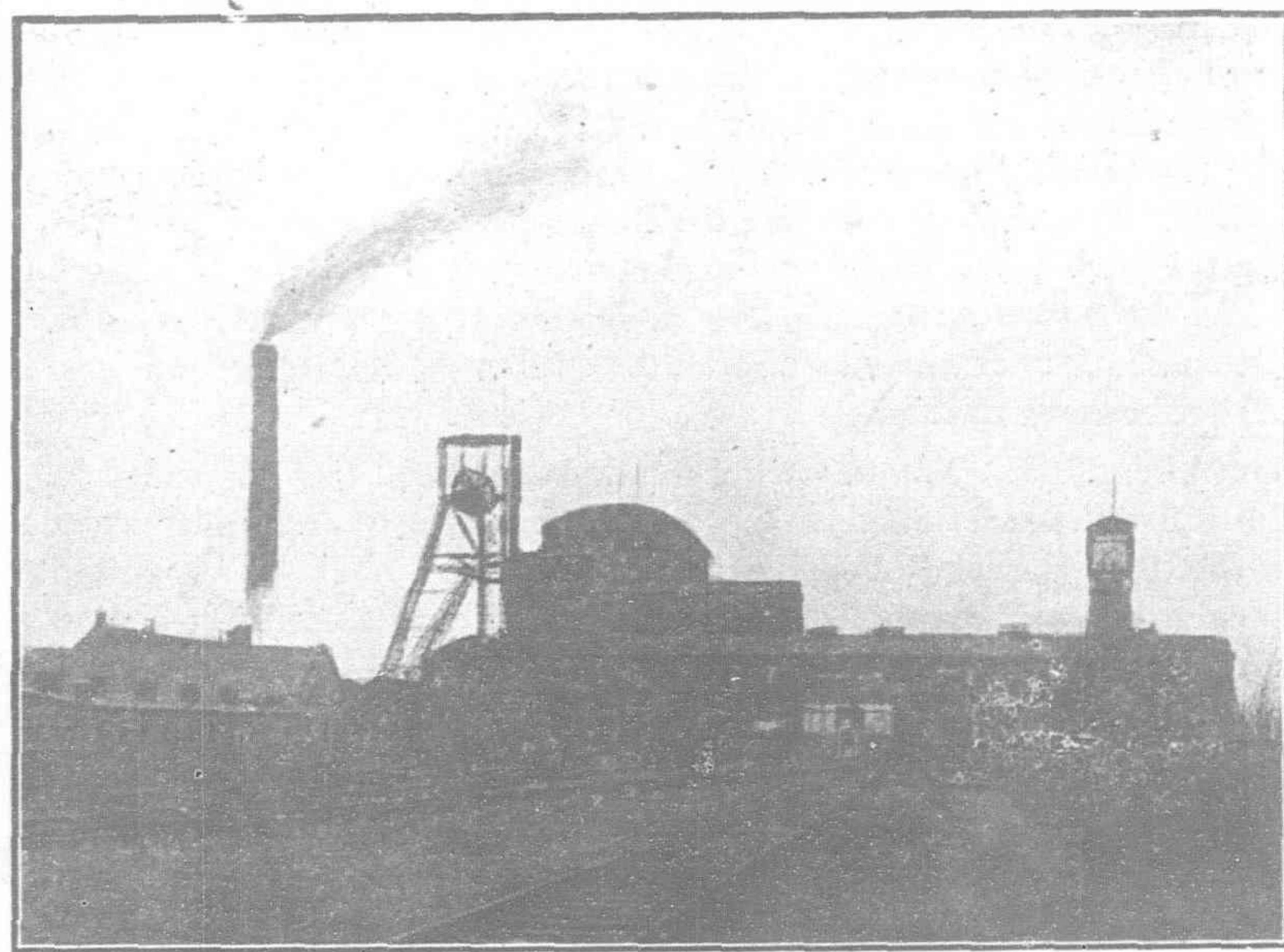
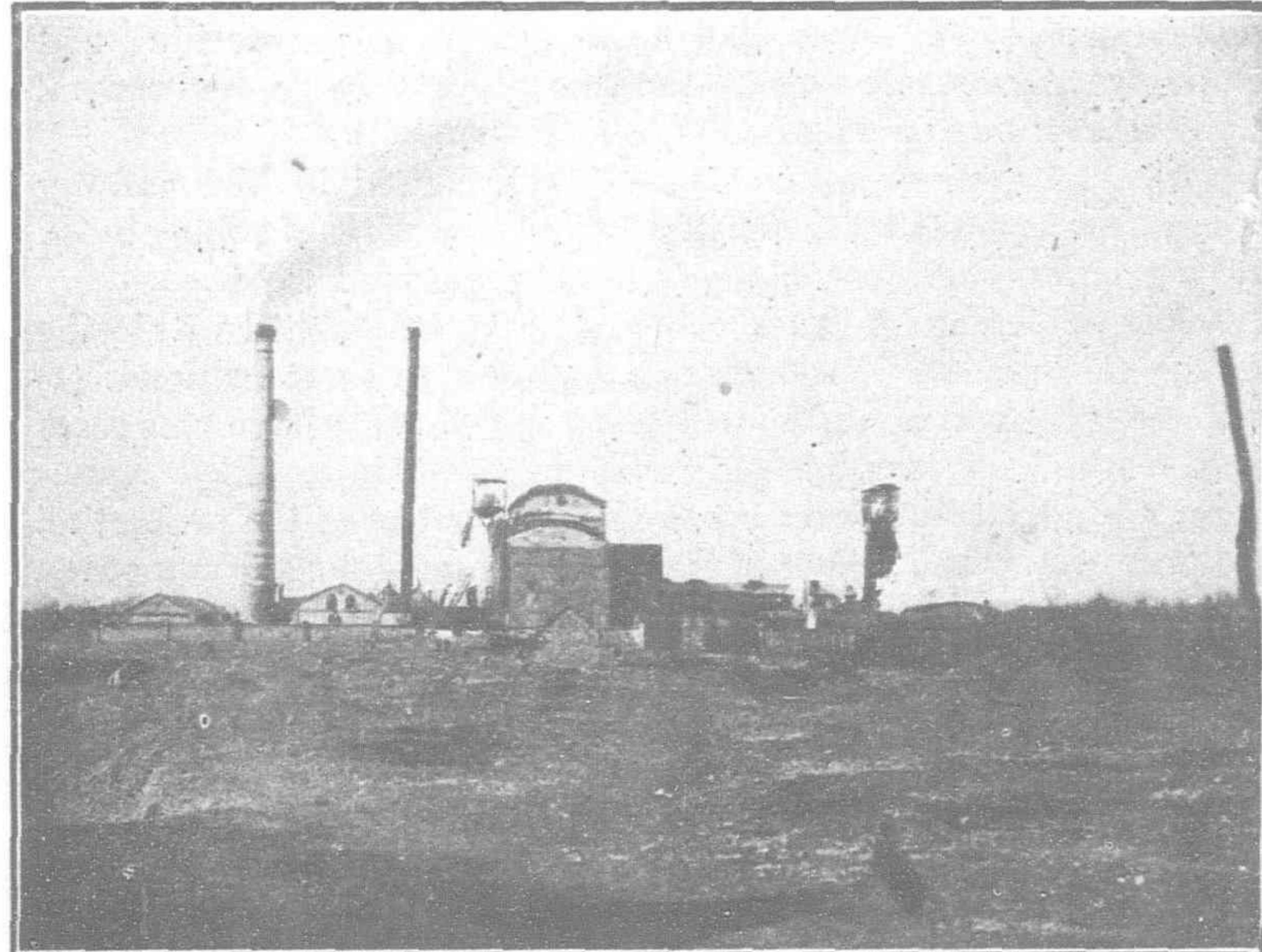
As a result of the special investigation of the Wei-hsien fields, the company decided to erect mining works there to provide for an output of from 600 tons and a probable increase to 1,000 tons daily. This work was commenced in 1901. When the mine

was opened it was found there were three strata, the top one of which 2 metres thick was not worth mining; 40 metres beneath this in a depth of 175 metres the principal stratum was found of about 4 metres depth. The coal contains about 30 per cent. of gas and about 15 per cent. ash, and shows a heating power of almost 7,000 calories. Porphyrite presses closely on the coal in parts. A third stratum 35 metres further deep, of about 3 metres depth, is shown to be robbed of a great deal of its gas in parts by the porphyrite, but in better situations has still 20 per cent. of gas, although unfortunately it contains quite as large an amount of ash. Mining was therefore possible only in the principal layer, whilst the under stratum was used as far as possible for inland supply. As expected, the coal was used largely, for stationary boilers and heating coal in

shows the mine entrance from the west, pictures 3 and 4 the arrangement of both shafts viewed from the east side.

The above official description of the old German Fangtze mines is reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914. The following data on the actual condition of these workings was obtained by the publisher of THE FAR EASTERN REVIEW, upon a personal visit on January 16, 1921.

It appears that the Germans disabled some of the machinery at the main Fangtze mine, described above, with the consequence that the mines became flooded, and it has been impossible to get them again in working order. The Japanese have, therefore, concentrated their efforts in sinking other pits in the adjacent coal-bearing area, trying to reach a deposit or veins which will warrant



THE FANGTZE COAL MINE—GENERAL VIEWS FROM THE EAST

This mine is completely flooded and has been abandoned by the Japanese. The hoisting engines and other machinery have been dismantled and installed at the Shilichuang Branch Mine of the Tsuchuan Colliery in the Poshan district. The Briquette Plant remains intact and is now being repaired and placed in working order to manufacture briquettes for the use of the Japanese navy.

the private and industrial establishments in the neighboring region and the regions beyond as far as Chingchoufu.

The output did not prove to be so large as was expected at first, so it was decided to make no further extensions to the mine, but to return to Hungshan where the second of the mines belonging to the company is situated.

The statistics of the Wei-hsien mine for the various years were as follows:—

1902/03	...	...	...	...	...	9,178.62	tons
1903/04	...	...	...	...	...	50,601.03	„
1904/05	...	...	...	...	...	100,631.06	„
1905/06	...	...	...	...	...	136,990.00	„
1906/07	...	...	...	...	...	164,437.05	„
1907/08	...	...	...	...	...	149,307.00	„
1908/09	...	...	...	...	...	250,214.05	„
1909/10	...	...	...	...	...	273,354.05	„
1910/11	...	...	...	...	...	193,497.05	„
1911/12	...	...	...	...	...	205,185.00	„
1.4.12-31.12.12-126.215,00 tons	1913	...	...	...	...	199,000.00	„

The works in Fangtze comprise a double shaft, a large repair shop with foundry, saw-mill, coal separation and shipping department, coal washer working at rate of 80 tons daily, a briquette manufactory for 30 tons daily output.

There were on the average about 25 Europeans employed in Fangtze, and 2,000 Chinese. The Europeans lived in a colony together.

In the photographs given, No. 1 shows the works with coal washer and briquette factory seen from the south, picture No. 2


extensive exploitation. The general location of these new pits and test shafts are shown on the map of the district.

## II.—Fangtze East Mine

This mine is one of the new ones opened by the Japanese about one mile south-east of the original Fangtze shaft sunk by the Germans. A shaft has been sunk to a depth of 236 feet, the level of the old Chinese workings, and a 30° incline driven to a depth of 324 feet, where a new coal body is being developed. The output from March to December 1920, was about 30,000 tons, all of which was sold within the province or deposited in the Central Fangtze yard. Its present output is approximately 150 tons per day, but could be rapidly increased by the employment of extra labor. The output is regulated at present by the railway budget appropriation for its working. The hoisting engine installed last year is from the Fukuoka Iron Works, of Kyushu, Japan. The rear three boilers, two of which were taken from a Japanese warship, and the third is a Lancashire type from the Sakaigawa Iron Works of Osaka.

## III.—Fangtze West Mine

This mine, located two miles to the west of the main Fangtze shaft, producing about 100,000 tons per year at present, is the most important of the new shafts sunk by the Japanese. There are four shafts from 120 to 130 feet deep, 1 for hoisting, 1 for workmen and materials and two for ventilation. Constant pumping is necessary to keep the galleries free from water. There are twelve pumps installed underground. The Japanese engineers are driving a 10° incline 1,014 feet long from the 120 feet level and hope to



## Map of the Fangtze Coal Region, showing New Mines and Test Shafts being worked by the Japanese

strike the lower coal strata at 330 to 350 feet. Other galleries are being opened at the higher level.

The mechanical equipment is a hodge podge of second-hand material, which, however, fully answers the purpose for the preliminary development work now in progress. Three marine and three small Lancashire boilers, an old German hoisting engine and a nondescript belt driven dynamo complete the plant.

In 1920, the output was about 100,000 tons, but is now about 200 tons per day. When working at the maximum of 380 tons per day, about 800 miners are employed, but with the present output of 200 the force is 450. There are 28 Japanese employees of all kinds.

#### IV.—Fangtze North and South and Central Mines

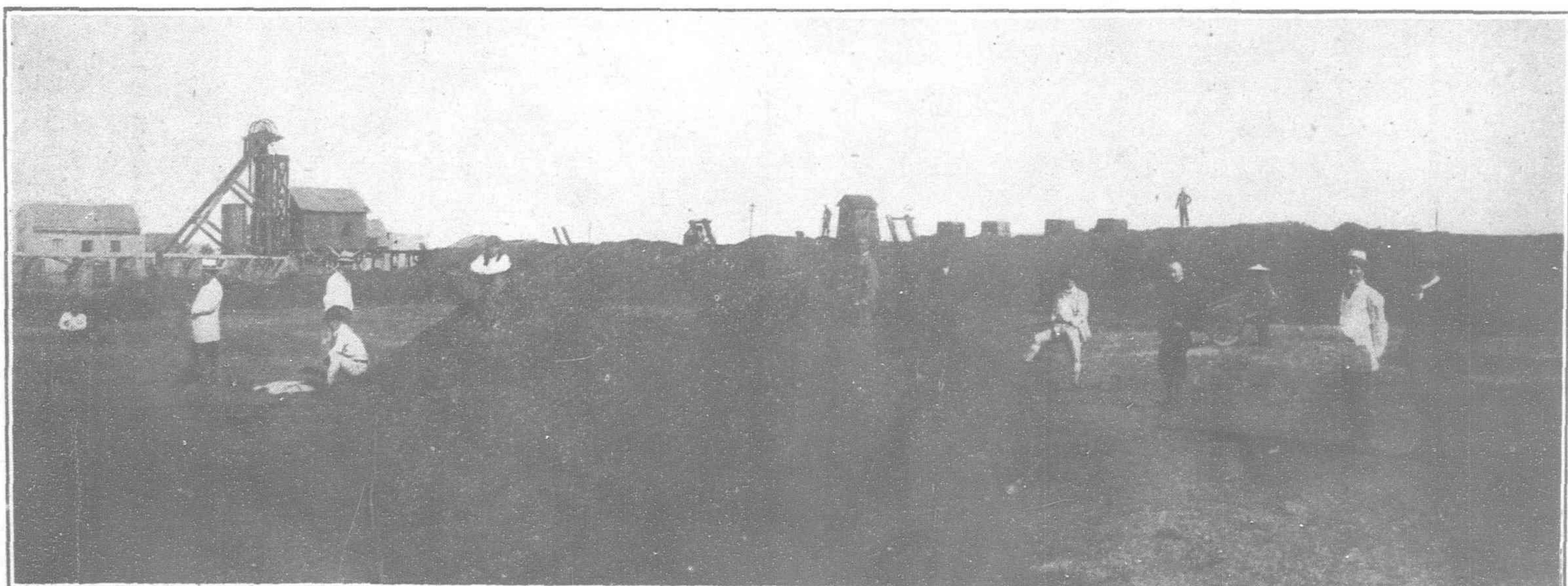
The original German workings extended underground on a general easterly direction from the Fangtze shafts, but as these have

of development, and are largely in the nature of tests. Several other test shafts have been sunk in the vicinity as will be noted on the accompanying map, but as yet no reports are available as to the results obtained.

#### V.—The Old Fangtze Mine

The original Fangtze mining works opened by the Germans comprised a double shaft with large repair shop with foundry and saw-mill, coal separator and loading bins, washing machine working at the rate of 80 tons per day, and a complete briquette plant having a capacity of 30 tons per day.

The main hoisting plant and other essential machinery of this plant has been dismantled and set up at the Shilichuang branch of the Tsuchuan mine. Only the briquette



Views of the Fangtze East Mine, opened by the Japanese and now producing about 150 tons per day, while development work is in progress

all filled with water, the Japanese have sunk other shafts far enough away from the old workings in order to tap the veins in more favorable places. In addition to the east and west mines above described, the Japanese have sunk shafts in what are called, the North, South and Central Fangtze Mines. The north and central shafts as yet are not producing, while the south mine had a very nominal output for the last year. This group is still in process

factory remains intact. The complete machinery for this plant came from Schüchtermann and Kremer of Dortmund. The two briquette machines, mixer and dryer are all of the Couffinhal system. In addition to the main briquette machines, there is a smaller one for making egg coal or boulets for house consumption. This entire plant with its main engine, elevators, shafting, etc., all of the best workmanship, installed in a separate building, fitted

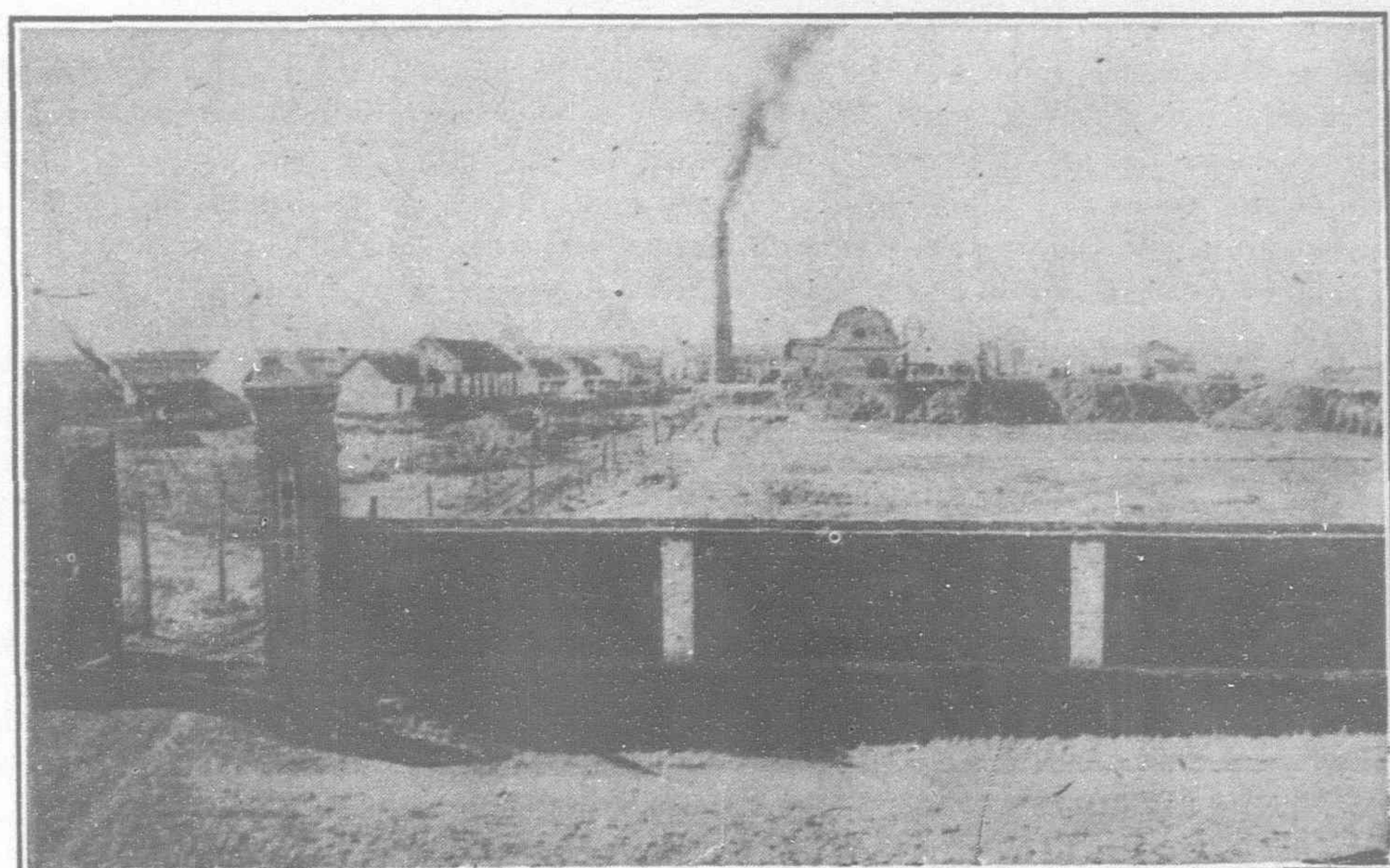
with iron galleries, staircases, etc., is perhaps the most complete and finished mechanical installation in the province of Shantung. A large pile of fresh briquettes on the loading platform bears evidence that the plant has recently been tested out, and when I went through, I found that the machinery was being cleaned and overhauled. As most of the coal from the Fangtze east and west shafts is dust, burning with little or no smoke, it makes an exceptionally good fuel for warships. I was told that an attempt would be made to re-open the briquette plant utilizing this dust coal from the near-by shafts, selling the product to the Japanese Navy.

Both the Fangtze east and west mines send their output by gravity cars to the main Fangtze works, which is used as a storage and railway loading station, thus keeping a constant supply of dust coal to operate the briquette plant at full capacity.

#### VI.—Output of the Fangtze Group

	Lump		Mixed		Bulk		Total (in tons)		1918	1919
	1918	1919	1918	1919	1918	1919	1918	1919		
Fangtze West ...	3,055	—	32,166	68,891	2,166	138	37,381	68,824		
" East ...	—	—	—	521	1,773	1,352	1,773	1,873		
" South ...	—	—	—	—	190	1,120	190	1,120		
Total ...	3,055	—	32,166	69,112	4,123	2,605	39,394	71,817		

The 1920 output for the Fangtze west was about 100,000 tons, Fangtze east, about 30,000 tons. At present the production has fallen off, but this is due to the temporary business depression,



General View of the Fangtze West Mine, opened by the Japanese and now producing about 200 tons per day

and to the further fact, that the budget production and allowance for working was exceeded last year, and until the new budget is passed by the Diet, work will be curtailed.

#### VII.—Fangtze Electric Light Plant

An exceptionally good German electric light plant is found near the Fangtze station of the Shantung Railway, furnishing light to the town. The dynamo is a Siemens Schuchardt 84 kilowatt direct current, belt driven by a cross compound condensing Corliss engine made by Schuchermann & Kremer.

## Poshan Coal Field—the Mines at Tsuchuan

**T**HE valley of Poshan, in which are situated the district towns of Poshan and Tsuchuan is about 20 miles long, and, from a couple of hundred yards at Poshan, nearly 6 miles broad where it joins the North Shantung plain, near Chouts'un. The whole of this valley is a vast bed of coal, situated at a deeper level in the middle and appearing on the surface at the edges, where it has been forced upwards by the pressure against the limestone of the surrounding hills. At the north-west exit of the valley the coal bed is interrupted by a chain of limestone hills; but it commences again and continues in undiminished quantity in a westerly direction, for another 20 miles, between the main range on the south and the Changpaishan on the north. In this valley and its branches are situated the mining centres of Puchi and Puchuan.

South of the narrow gorge at Poshan another valley opens out, in which is situated the Heishan or Black Hill, in contrast to the Hungshan or Red Hill, so called from its ruddy appearance, which lies to the north-east of Tsuchuan, near the entrance of the valley.

The best quality of anthracite coal is found near the surface in the Heishan Valley, and it is on account of this coal that Poshan has been famous. It is principally used in manufacturing coke, which, owing to its lightness, can be transported further by wheelbarrow than the heavier coal. Poshan coke is used at Ch'ingchou-fu, Chouts'un, and at Tsinanfu and was even sold at Kiaochou, a distance of 500 li. Unfortunately, the Chinese were unable to cope with the waters in the shafts, and most of the mines were obliged to suspend work. The method of removing the water is

extremely primitive. A basket woven of willow twigs is passed from one man to another, and is then emptied into a ditch at the mouth of the coal pit. As the galleries are low and narrow—about 3 to 4 feet in diameter—the miners are obliged to work in a sitting position, and during the time that water is being removed from the mine other work has to cease. The side galleries are short, and are shored up with millet stalks supported by short wooden props. In a country devoid of timber the cost of shoring up extensive galleries, and, in addition, the difficulty of removing the water, is so considerable that the miners are prevented from going far into a seam of coal. The cost of timber may also account for the small diameter of the galleries, which, if enlarged, would need extra support.

The coal, loaded on low, wooden trucks, with iron wheels manufactured at Chinlingchen from T'iehshan iron, is run along the galleries on wooden ways until the bottom of the main shaft is reached, and is then hoisted by wicker basket attached to a pulley on a framework built over the mouth of the pit, pulled by horses.

The Tsuchuan coal mines, worked by foreign machinery supplied by an English firm, were closed in 1891. In 1898, the machinery having been partially repaired at the Tsinan Arsenal, it was put up by a Cantonese at the foot of the Hungshan, at a place called Nanp'u, and used instead of a pumping apparatus. The native coal pits, being situated at a higher level, were thereby drained of the water which had put a stop to their working. Work was resumed with great vigour, and the Cantonese drew a royalty for keeping the mines dry. The Hungshan surface coal is not as good in quality as that from the Heishan mines, and is not

suitable for coke. The best quality lump costs from 5 to 6 large cash a catty at the mouth of the pit; 2nd quality, about 3 cash; and dust, from 1½ to 2 cash. The transport by wheelbarrow has been calculated at about 12 cents a ton per *li*, and this must necessarily limit the consumption of coal to a very small radius, notwithstanding its low initial cost. At Tsinanfu for instance, a ton costs \$20.

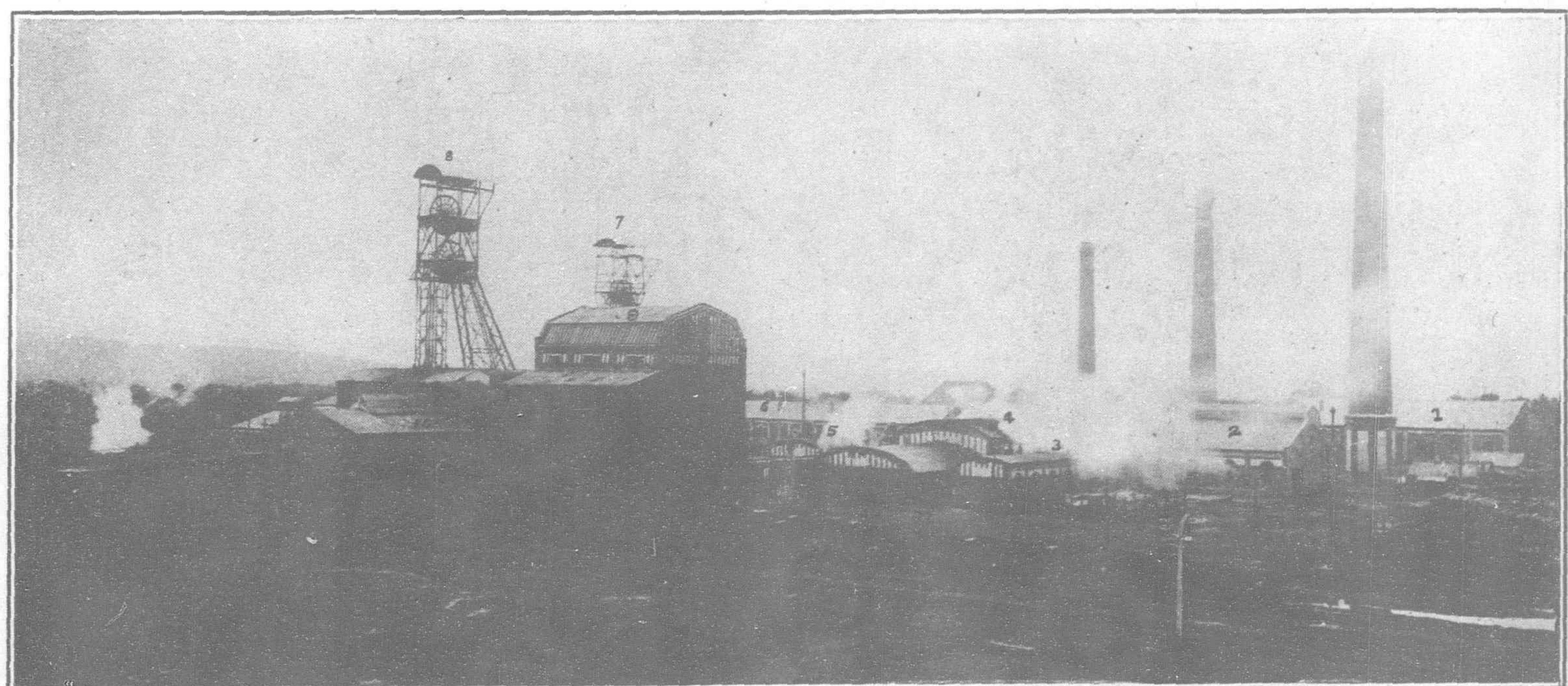
The Shantung Mining Company, in the supposition that the superior Heishan coal which crops out at the head of the valley is the continuation of the main coal bed, centered their operations to strike it at a lower level, nearer the main railway line which crosses the entrance of the valley at Changtien, thus reducing the distance of the subsidiary line from the mine to the junction with the main line at Changtien.

The German mining parties concentrated their efforts to locate coal at Weihsien, Poshan, Putsan, Putschi, Tawenkou, Ihsien and Kuetschow and for iron ore at Chinlingchen. The combined results of all the geological researches proved much less than they had been led to expect from the exaggerated Chinese reports. Many stories and legends abounded about the presence of gold, silver and lead and large diamond mines near Yichowfu, which on examination proved to be greatly exaggerated.

The Germans therefore decided to develop the coal fields at once. Coal deposits were located in most of the inlets of the

three strata groups, the first 100 metres underneath the characteristic top layer shows about 16 metres of four single strata of 2½ metres altogether of a really first-class rich coal, having about 17 per cent. gas, and about 8 per cent. ash. The second group, situated about 60 metres from the first, contains three strata in 17 metres, having altogether 1.8 metres coal, likewise of the best quality, but containing on the average 10 per cent. ash and only 15 per cent. gas, which makes the sale of this coal just possible. At a further distance of 100 metres a third group of four strata is found in a extensive mountain layer of about 20 metres, containing 4.2 metres of an anthracite coal having 12 per cent. gas and the same quantity of ash, but of very considerable heating value.

Several of the layers are not worth exploiting. They are, however, cheap to work as they lie between good species of soil, so that the cost in wood is small. In practice the coal is found to be excellent steam coal, and also has the special advantage of being almost smokeless so that it is particularly suitable as a substitute for the expensive Cardiff coal used on warships. Very good hard coke, suitable for oven heating is obtained from the two top strata groups, so that the 40 per cent. of slack from these groups can be turned to most profitable uses. As the coal was found to offer such good advantages, a second shaft was soon made, and was followed by a third shaft with entirely separate mining works, which rendered



View of the Tsuchuan Coal Mining Plant

(1) Electric Plant; (2) Boiler House; (3) Ventilating Plant; (4) Air Compressor Plant; (5) Hoisting Engine for the Tsuchuan Shaft; (6) Machine Shops; (7) Tsuchuan Shaft Head Gear; (8) Martha Shaft Head Gear; (9) Coal Washing Plant; (10) Loading Department.

mountain chain bordering on Tsinanfu, Yhsien, Itschou, Kuetschou, Tsingtschoufu, later on, however, these were wholly or partly washed away, and through volcanic influence finally displaced and partly demolished.

It is, however, owing to these same volcanic disturbances that connection was established with the older numerous metallic veins in the mountains, which as already mentioned, are not worth mining, the one exception to these being the large magnetic iron deposit near Chinlingchen of extremely good quality, and in addition a similar deposit, but less valuable on account of the silics contained, in the neighborhood of Yhsien.

On the completion of the general geological researches made, it was decided that following the progress in the building of the railway line, a further special investigation of the remaining mining grounds should be conducted.

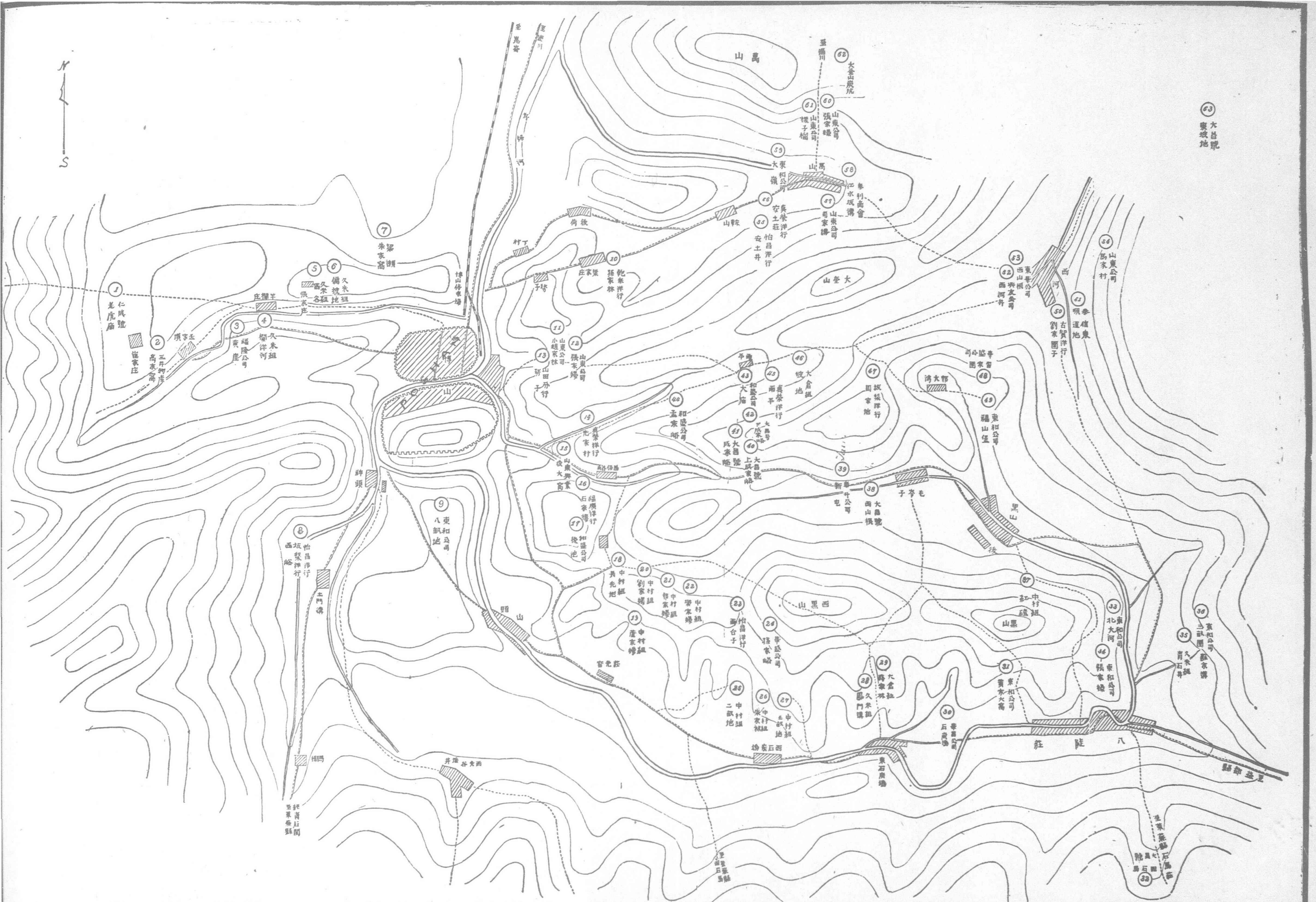
The progress of the railway having made the further special examination of Poschan possible, this was started in the year 1902 and carried on until 1904 when the first shaft was sunk. It was carried down to a depth of 268 metres when it was found there were

possible the separation and expedited the mining of the coal apart from the first and second groups. By the end of the year (1913) the total works consisted of the following:—

- 2 Principal shafts for rich and poor coal, also an emergency shaft built of stone and iron collectively.
- 1 Coal washer for poor coal
- 1 Coal washer for rich coal
- 1 Coal separator with carriage
- 1 large repair shop
- 1 Electric shop

The entire works produce the following results in figures:—

1906/07	...	...	...	...	14,646.05	tons
1907/08	...	...	...	...	40,899.05	„
1908/09	...	...	...	...	72,467.73	„
1909/10	...	...	...	...	183,449.84	„
1910/11	...	...	...	...	237,544.35	„
1911/12	...	...	...	...	283,208.50	„
1.4.12--31.12.12	...	...	...	...	299,652.50	„
1913	...	...	...	...	414,000.00	„



MAP OF THE POSHAN COAL DISTRICT, SHOWING MINES BEING WORKED

The total output of these native and other workings is about 700,000 tons per year, which finds a market within the province. Some of this Poshan coal is now being exported to Denmark. Names of companies operating mines marked on the map: 1, Jinsei Company; 2, Mitsui and Company; 3, Fukuryu Company; 4, 5, 6, Kume Gumi; 7, Yanasi Company; 8, Taisho Company; 9, To-a Company; 10, Kantei Company; 11, 12, San To Company; 13, Yamada Company; 14, Shinyei Company; 15, San To Kogyo; 16, Fukuzun Company; 17, Wasei Company; 18, 19, 20, 21, 22, Nakamura Company; 23, Taisho Company; 24, Kasei Company; 25, 26, 27, Nakamura Company; 28, Kumei Gumi; 29, Okura Gumi; 30, Kasho

Company; 31, To-a Company; 32, Taisho Company; 33, 34, To-a Company; 35, Kumei Gumi; 36, To-a Company; 37, Nakamura Company; 38, 39, Taisho Company; 40, 41, 42, Taisho Company; 43, Wasei Company; 44, Wasei Company; 45, Chokuyei Company; 46, Okura Gumi; 47, Sakanashi Company; 48, Kasei Company; 49, To-a Company; 50, Kogu Company; 51, Tai-shing Company; 52, Koyu Company; 53, To-ka Company; 54, Santo Company; 55, Taisho Company; 56, Shinyei Company; 57, Santo Company; 58, Tairi Company; 59, To-a Company; 60, 61, Santo Company; 62, Dai Fusan Company; 63, Daisho Company.

The following statistics show the use to which the coal has been put in the last few years:—

	HUNGSHAN	FANGTZE
In use at the Pit itself	... 27,200 tons	49,200 tons
Wash and gleanings	... 44,000 "	20,400 "
Local sale at the shaft	... 38,000 "	16,200 "
Inland sale by rail	... 110,300 "	52,100 "
Use on Railway	... 19,500 "	14,500 "
Sale in Tsingtau, local sales	10,000 "	41,600 "
Bunkered and shipped via Tsingtau	... 165,500 "	5,000 "
	414,000 tons	199,000 tons

There is an average of about 30 Europeans employed in Hungshan, and about 5,400 Chinese. As the surrounding villages supply plenty of workmen, there is only a home colony for Europeans.

The above official description of the German mines at Tsuchuan or Hungshan, is reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914. Since that date, only three Europeans have received permission to visit the mine, previous to the visit of the publisher of THE FAR EASTERN REVIEW, on January 17, 1921. The following information was obtained upon the ground from official records and plans, and allowing for possible minor errors arising from the difficulty of translating technical terms from the Japanese, is accurate and up-to-date. There was no effort made to conceal any part or working of the mine. Everything, even to the records, were open to my scrutiny.

When the Germans withdrew from the Tsuchuan mines at the outbreak of the war, they damaged the machinery, but not the main shafts. It may be said, that with some minor alterations and additions, the original German equipment is complete and in use at the present time. With the stoppage of the pumps, the mines filled with water, and before the Japanese finished repairing the machinery the galleries were completely flooded. It was not until January 1915 that pumping could be commenced. Over 45,000,000 cubic feet of water was pumped out before working could be again resumed in July 1915. During this period, a small amount of coal, or about 300 tons per day, was mined from some of the upper veins, but it was not until May 1916, that all repairs to the machinery were completed, and the output again reached 1,500 tons.

**NATURE OF DEPOSIT.**—The coal may be classified into three groups according to the depth of the veins from which they are mined. Down to the 5th vein at 151 meters below the level, the output may be classified as a free burning smoke coal. These veins, however, are not being worked at present. From the 6th vein at 185 meters below the level, to the 9th at 219 meters, the coal is semi-smokeless, while coal from the 10th and 11th veins at 271 meters is smokeless.

The number of veins, their width and depth below the surface, are as follows:—

Vein No. 1.	Width 15 c.m.	Depth below level 105 meters
" 2.	40 "	125 "
" 3.	20 "	131 "
" 4.	25 "	139 "
" 5.	40 "	151 "

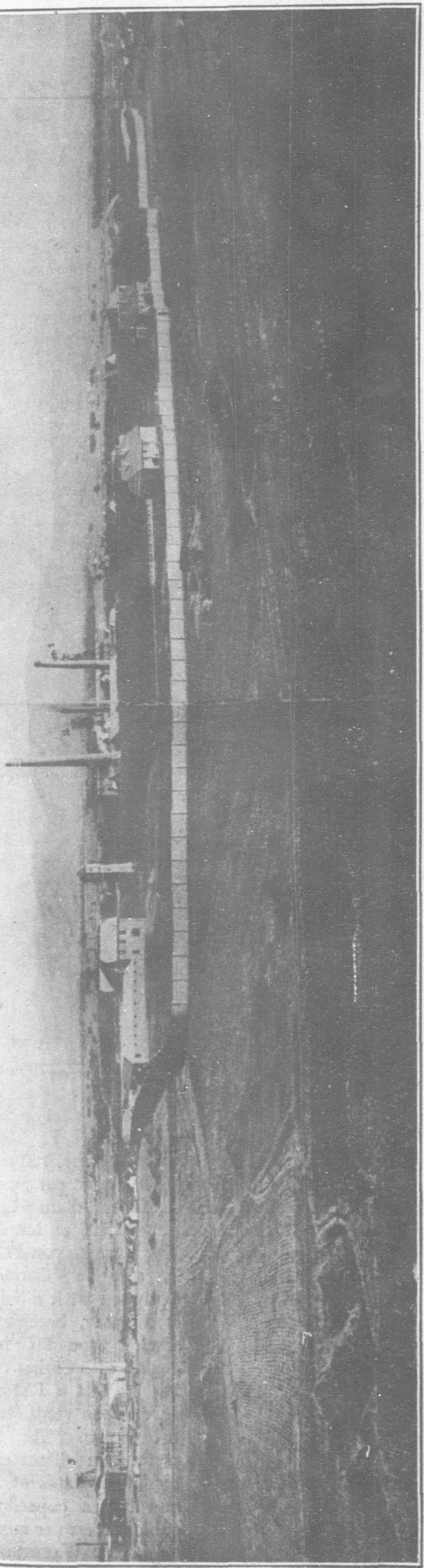
**Note**—All output is now being taken from the following veins:—

Vein No. 6.	Width 60 m.c.	Depth below level 185 meters
" 7.	30 "	199 "
" 8.	30 "	204 "
" 9.	10 "	219 "
" 10.	2.40 "	271 "
" 11.	2.40 "	273 "
Total depth reached		275 "

**SIZE OF DEPOSIT.**—Total estimated area of coal bearing district, 418 sq. kilometer main deposits extend for about 40 kilometers along the river bed between Poshan and Tsuchuan, with a total estimated area of 186 sq. kilometers. Area proved by Germans, 130 sq. kilometers. Estimated total deposits in area proved by German borings, 800,000,000 tons.

**SHAFTS.**—Three shafts have been sunk at Tsuchuan. No. 1, now known as the Tsuchuan shaft was commenced by the Germans

GENERAL VIEW OF THE TSUCHUAN MINES  
(1) Martha Shaft; (2) Tsuchuan Shaft; (3) This is the 3rd German Shaft which was sunk in 1913 and complete independent mining works were to be installed. The war started before the machinery was ready to be shipped, but the buildings and steel head gear are all complete. This shaft is not being worked.



on June 15, 1904 and reached a depth of 268 meters in 1909. This shaft is about 4 meters in diameter. The second shaft retains the name of "Martha" given it by the Germans. It was commenced in 1910 and reached a depth of 275 meters in 1912. This is somewhat larger in diameter than the first shaft, the space for the two cages measuring 2.5 by 3.030 meters. The four deck steel cages are, 91 m. x 3.020 m. the galleries are all laid with light railways, using horses to draw the cars to the shafts.

**ELECTRIC PLANT.**—The Tsuchuan mine is equipped with an excellent electric light and power plant. The original German plant consists of two alternating sets to which has been added one new Parson's turbo-alternating sets.

The two German sets are made up as follows: *Engine*: Schuchtmann and Kremer; (2) horizontal condensing tandem compound Corliss type. *Cylinders*: H.P. 525 m.m. diameter, L.P. 850 m.m. stroke, 900 m.m. r.p.m. 125; condenser and air pump, jet type double acting, air pump cylinder, 400 m.m. diameter, stroke, 450 m.m. Engine develops 600 horse-power when steam pressure is 8 kgs.

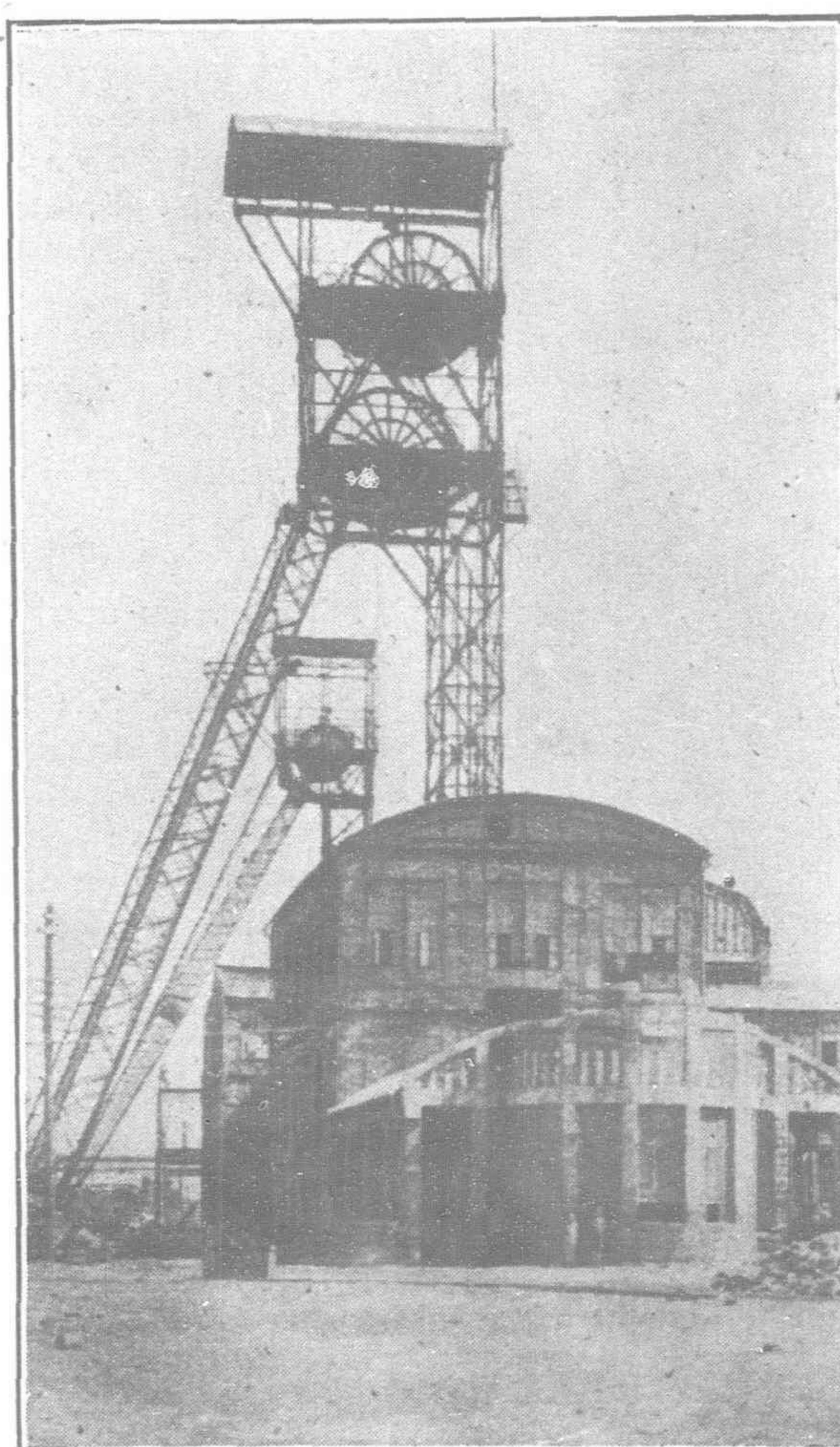
**GENERATORS.**—(2) A.E.G. direct coupled revolving field 3-phase alternating, 3,000 volts, 100 amperes, capacity 520 K.V.A., speed 125 r.p.m., 50 cycles, 24 pairs of poles. Exciter; direct coupled shunt type 110 v., 114 amperes, 125 r.p.m. 12.5 kw.

1, C. A. Parson's turbo-alternator, 1,000 kilowatts, 3,500 volts, 205 amperes, 3-phase, 50 periods, working at 3,000 r.p.m. This set was made originally by the Mitsubishi Zosen Kaisha, Nagasaki works, for the Hanslim Electric Railway plant at Amagasaki, between Kobe and Osaka, and sold to the Shantung Railway for the mine.

In addition to the three main generating sets, there is a 20 H.P. A.E.G. motor for the boiler plant blower. The switch boards are all of the A.E.G. direct contact panel type; six panels for various purposes. There is an overhead hand power travelling crane, 17 m. span, lifting capacity, 5,000 kgs.

**STEAM GENERATORS.**—There are two batteries of water-tube boilers, of 150 H.P. each, a total of 600 H.P. The first battery is composed of two Babcock & Wilcox water boilers, with mechanical stokers from the British Underfeed Stoker Co., Ltd. The second battery of two boilers are from Aultman & Taylor of Mansfield, Ohio, and were apparently built originally for the Worcester Mass. Consolidated Street Railway, sold through Thayer & Company of New York. There are two Weir feed pumps.

**MAIN BOILER HOUSE.**—The boilers for the general steam supply of the mine are installed in two houses. The entire battery consists of 19, three tube Lancashire type boilers, all of German make. Five of the boilers are from the Genekschaft, of Orange, two from Borsig, of Berlin, and twelve from Humboldt at



Head Gear of the Martha and Tsuchuan Shafts

Kalk. The 12 Humboldt boilers are 7-ft. 3-in. x 29-ft. 6 $\frac{1}{2}$ -in. with 710 feet of heating surface and 22.76 sq. feet of grate area.

**HOISTING ENGINES.**—**TSUCHUAN SHAFT.**—The main hoisting engine for this shaft is from the German factory, Gutehoffnung-Shutte, Abt., of Sterkrade, made in 1910. Cylinder, 600 m.m., stroke, 1,000 m.m. 125 r.p.m., lifting 2 tons. Winding drum, 3,000 m.m., width 1,000 m.m. The steel hoisting cage for this shaft is a two deck affair carrying four half ton cars. This shaft is also equipped with an underground hoisting engine for the main incline, with a cylinder diameter of 275 m.m. and 520 m.m. Stroke drum diameter, 2,450 m., width 510 m.m.

**"MARTHA" SHAFT.**—The main hoisting engine for this shaft is also from the Gutehoffnung-Shutte, Abt., Sterkrade. It is a horizontal duplex engine with direct coupling Koeps drum, developing 900 horse-power. Steam cylinder 750 m.m., stroke, 1,600 m. Drum diameter, 6,000 m. Maximum speed for winding, 8 meters per second. This engine hoists a four deck steel cage, carrying two half-ton loaded cars to the deck, by a wire rope 165 m.m. diameter, 415 meters long (140,000 kilos breaking strength). The head pulley is 5 meters in diameter.

**MATERIAL SHAFT.**—The third shaft of the Tsuchuan mine is used for materials, and has a horizontal duplex with two stage gearing single winding engine, 220 m.m., cylinder x 300 m.m. stroke.

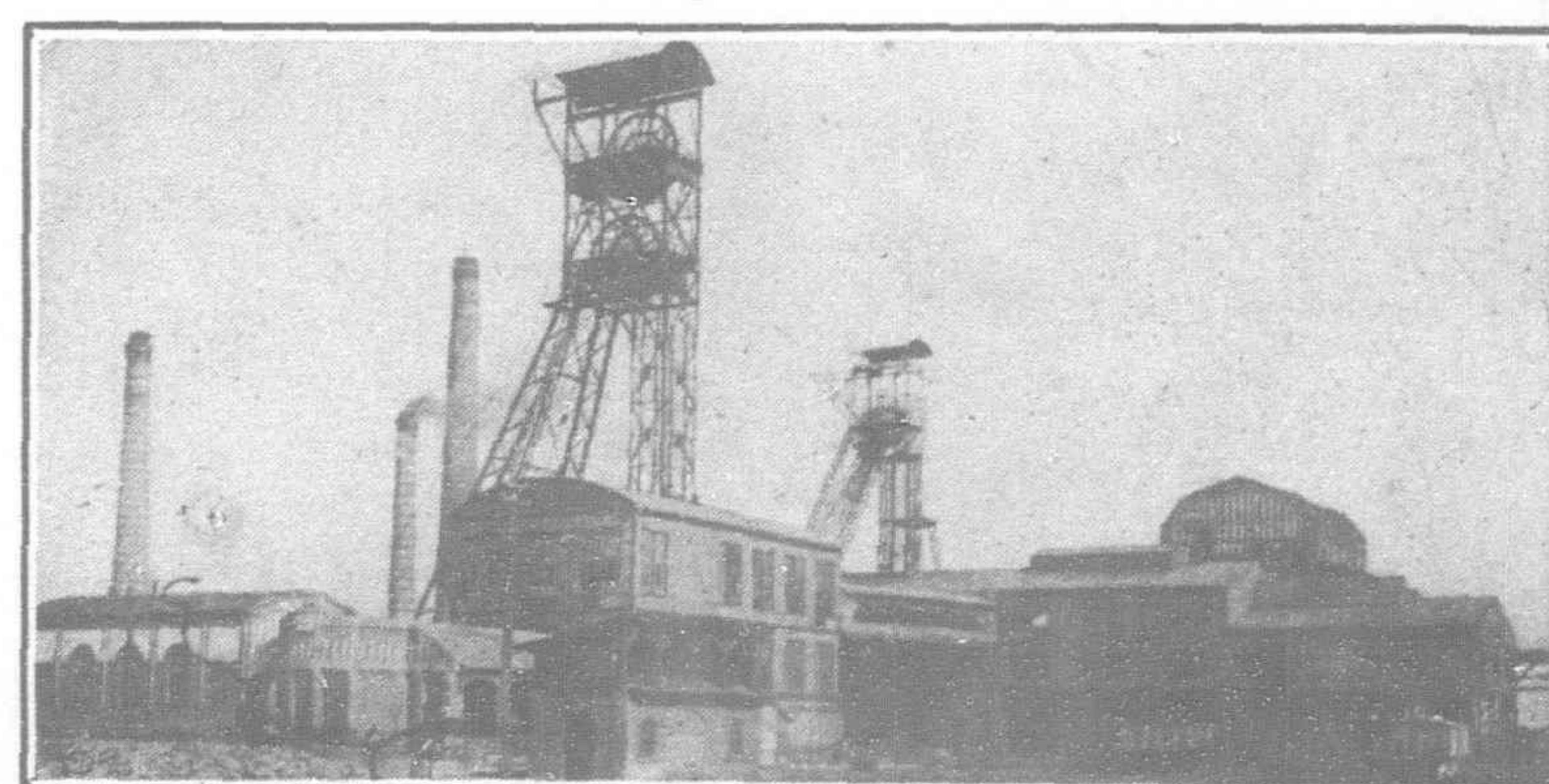
**AIR COMPRESSION PLANT.**—This is a very complete and compact installation from the best German makers. There are four compressors, three being of the Koster type from the works of Pokorny & Wittekind Maschinenbau A.G. of Frankfort a/m, and another larger one with no marks of identification, but possibly from Schuchtmann & Kremer.

The three from Pokorny & Wittekind, are horizontal cross compound straight line direct acting two stage compressors with steam cylinders, H.P. 385 m.m. diameter, L.P. 570, m.m., air cylinders, H.P. 350 m.m. L.P. 555 m.m., stroke, 700 m.m., speed, 130 r.p.m., capacity, suction of free air, 80 cubic meters per minute. The fourth compressor, unidentified, is of a similar type with a H.P. steam cylinder, 450 m.m. in diameter, L.P., 700 m.m., air cylinders, H.P. 405 m.m., L.P. 640 m.m., stroke, 780 m.m., speed, 130 r.p.m., capacity, free air suction, 100 cu. m. per m.

There are two receivers, one 1,625 m. diam x 9,500 m. in length, the other is 1,525 m. diameter x 11,100 m. long.

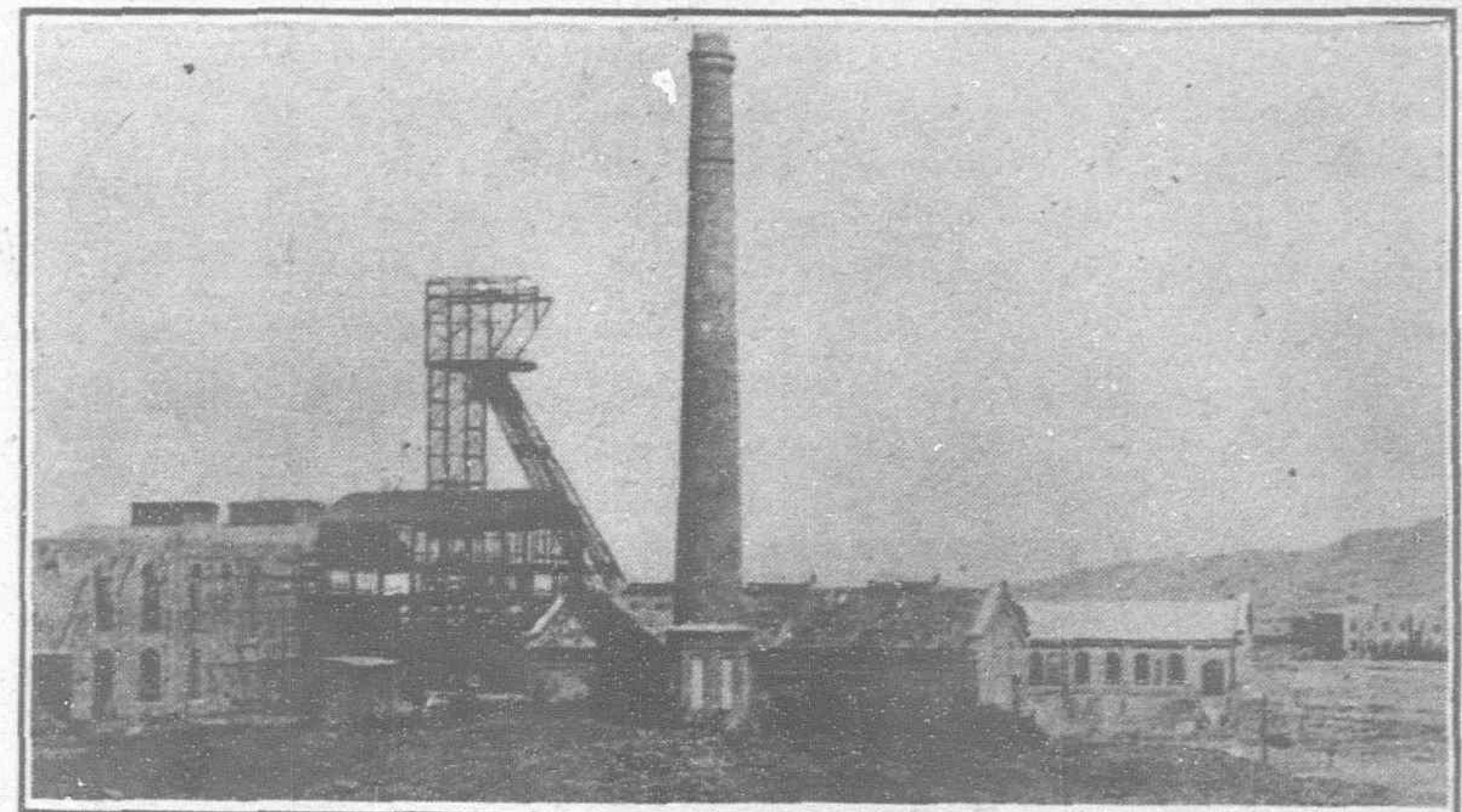
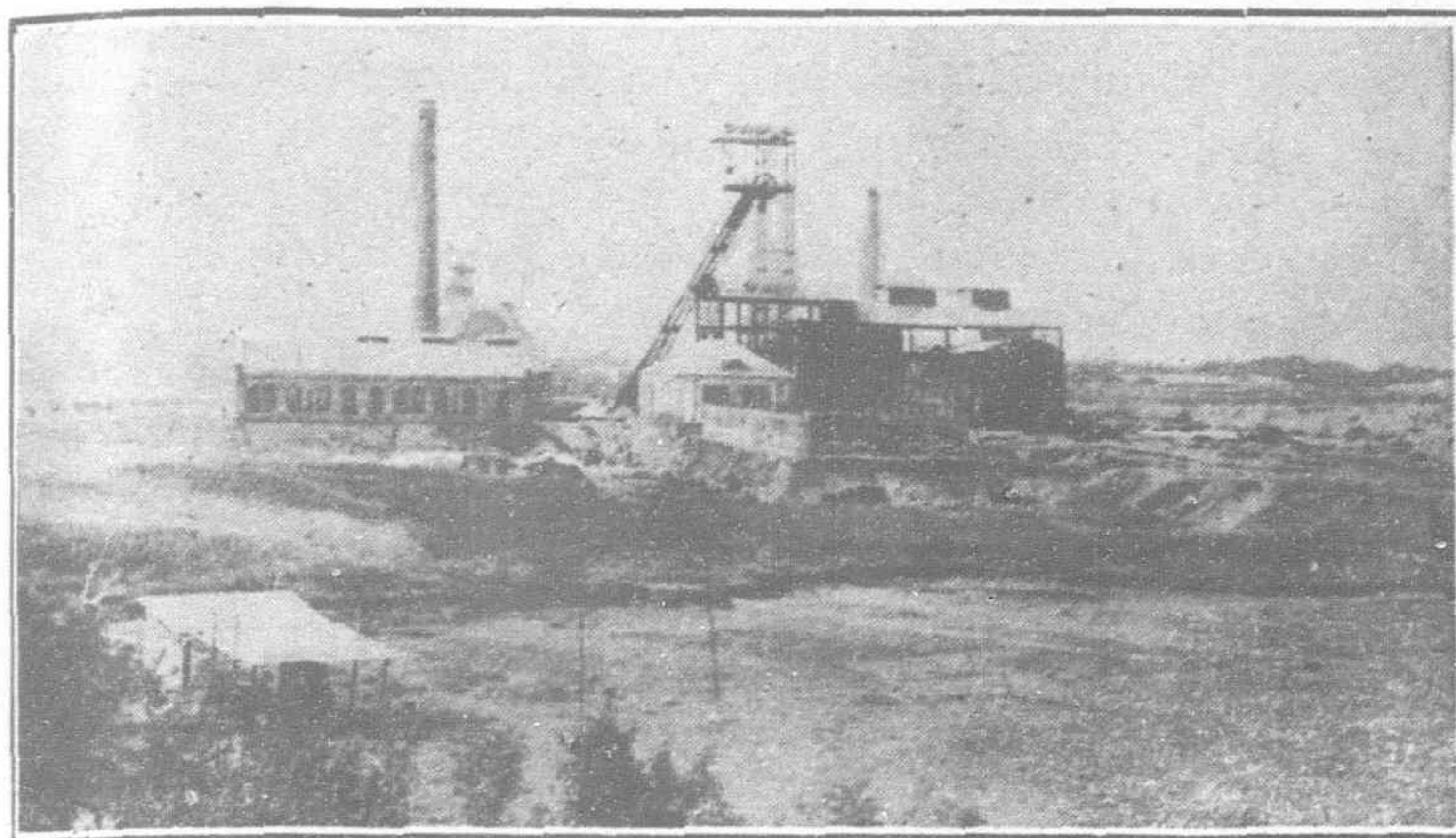
**VENTILATOR PLANT.**—This is also a German plant, equipped with a Schuchtmann & Kremer, horizontal duplex single type 90 horse-power engine with Corliss valves, driving by belt a Rateau forward curve vane ventilator made at the works. The fan, 2,400 meters in diameter, has 20 blades, operates at 250 r.p.m., and has a capacity of 3,000 cubic meters per minute.

**COAL WASHING PLANT.**—This is of the Humboldt type

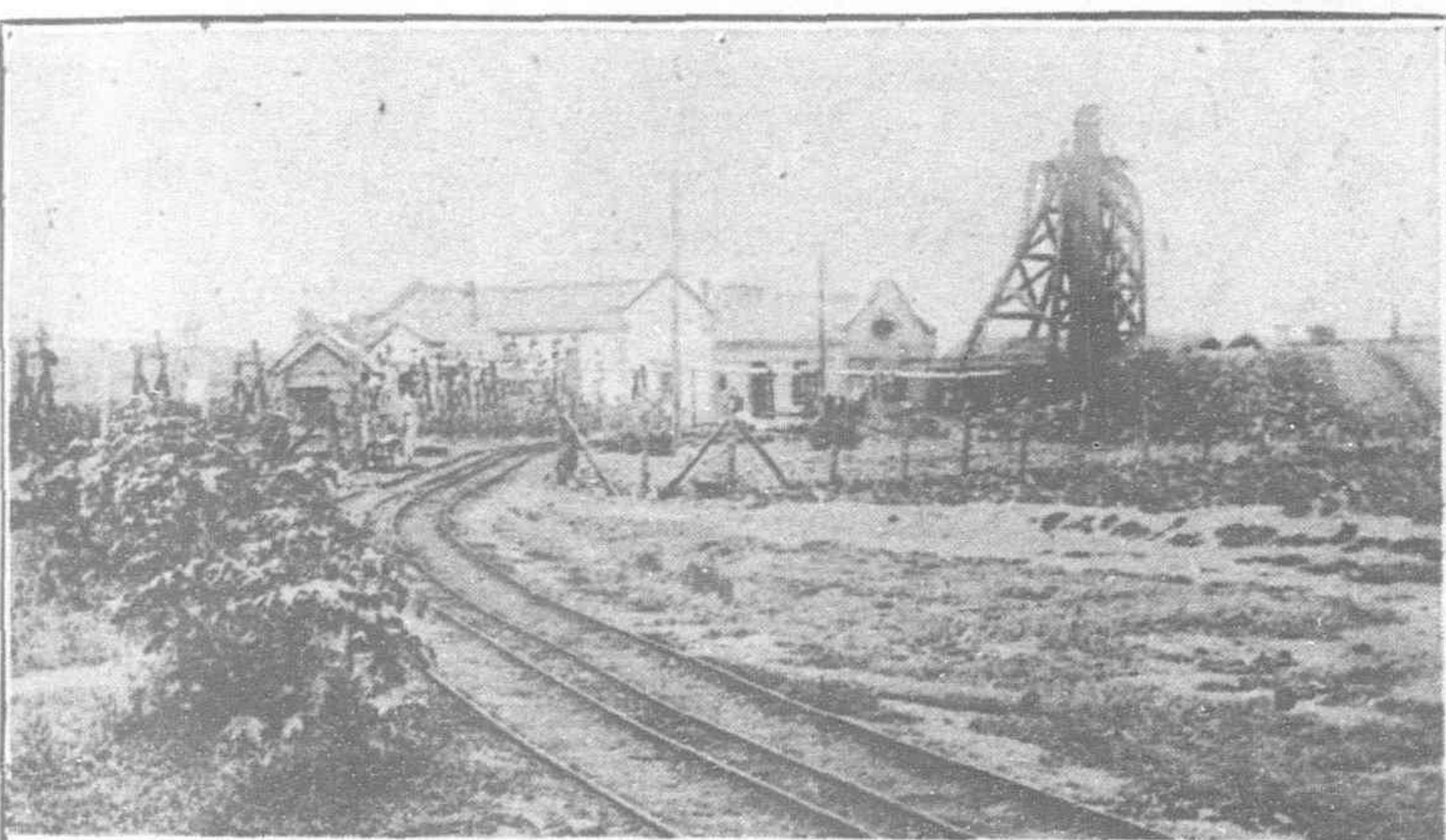


Another view of the Tsuchuan Colliery showing Loading and Shipping side

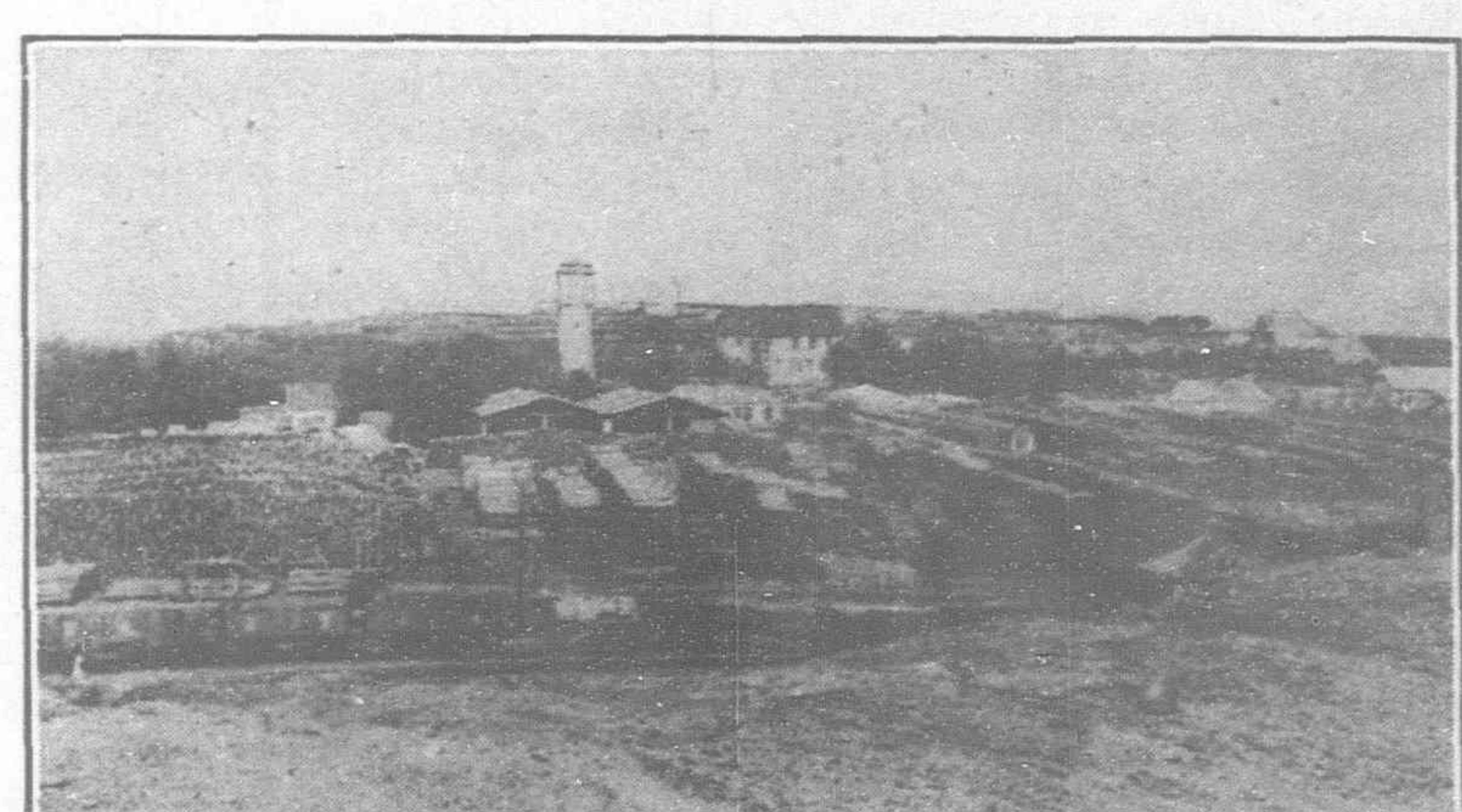
## VIEWS OF THE TSUCHUAN COLLIERY



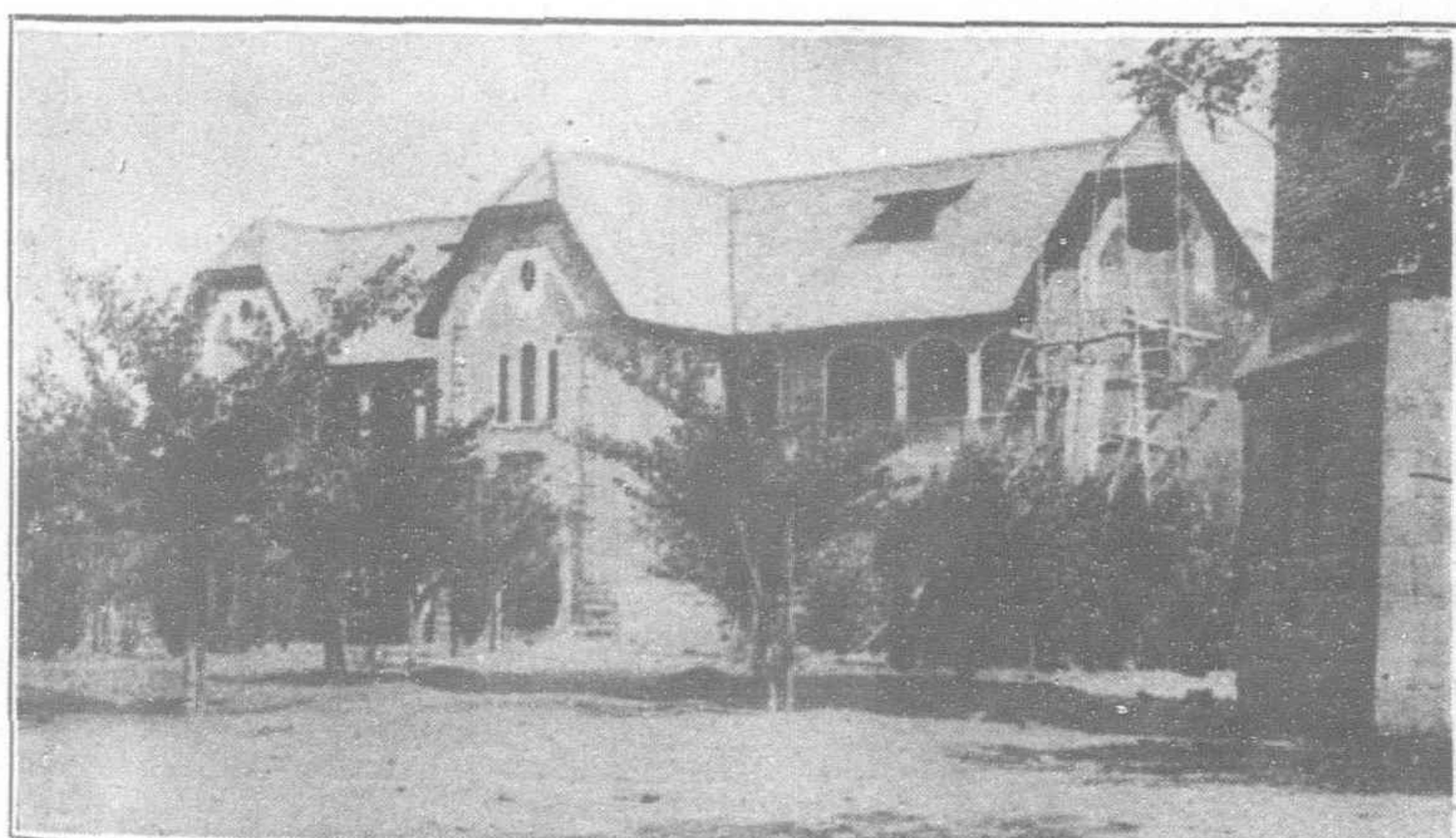
Views of the Third German Shaft with completed Buildings for Independent Mining Works



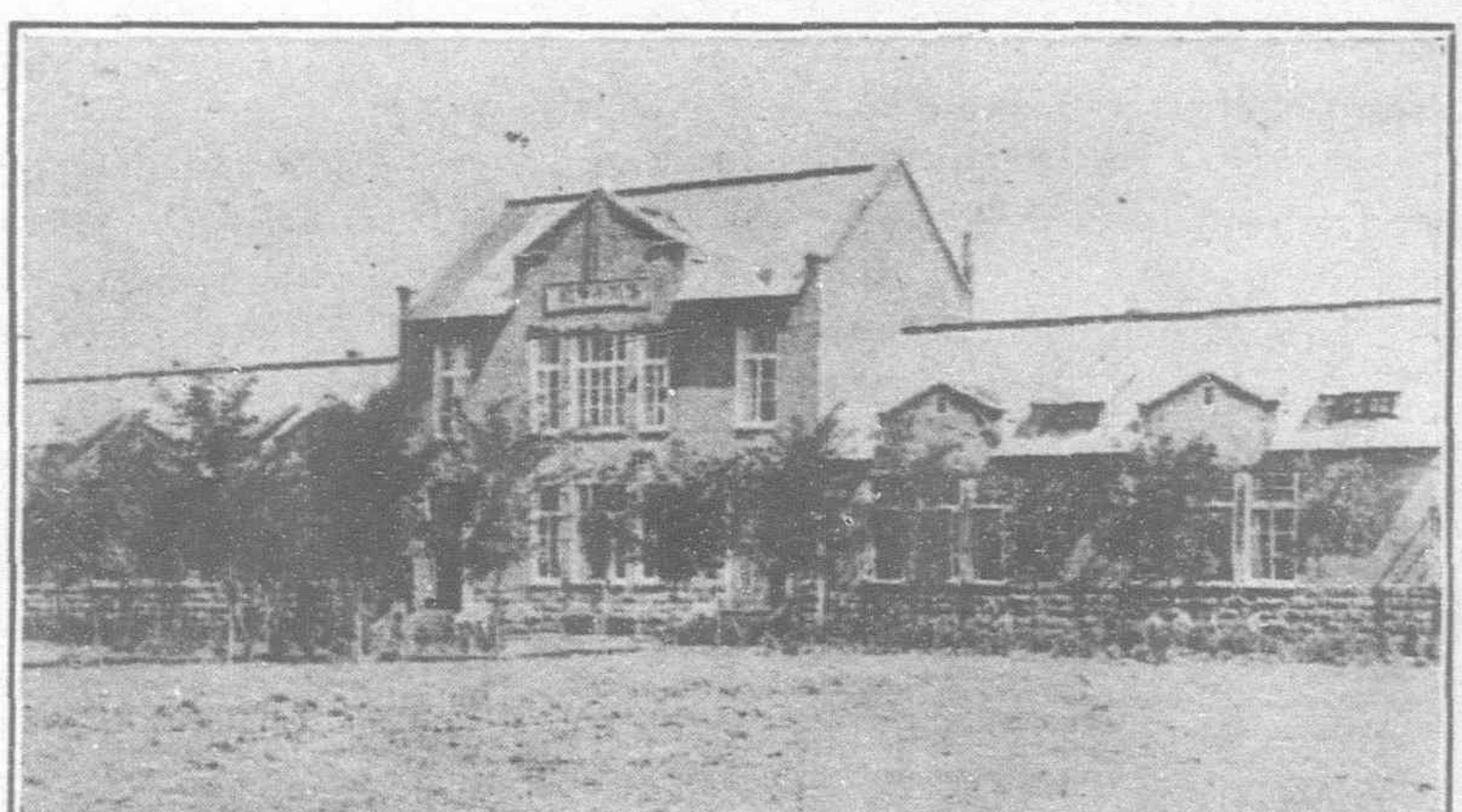
The Branch Mine at Shilichuang, where the German Machinery from the Fangtze Mine has been Installed



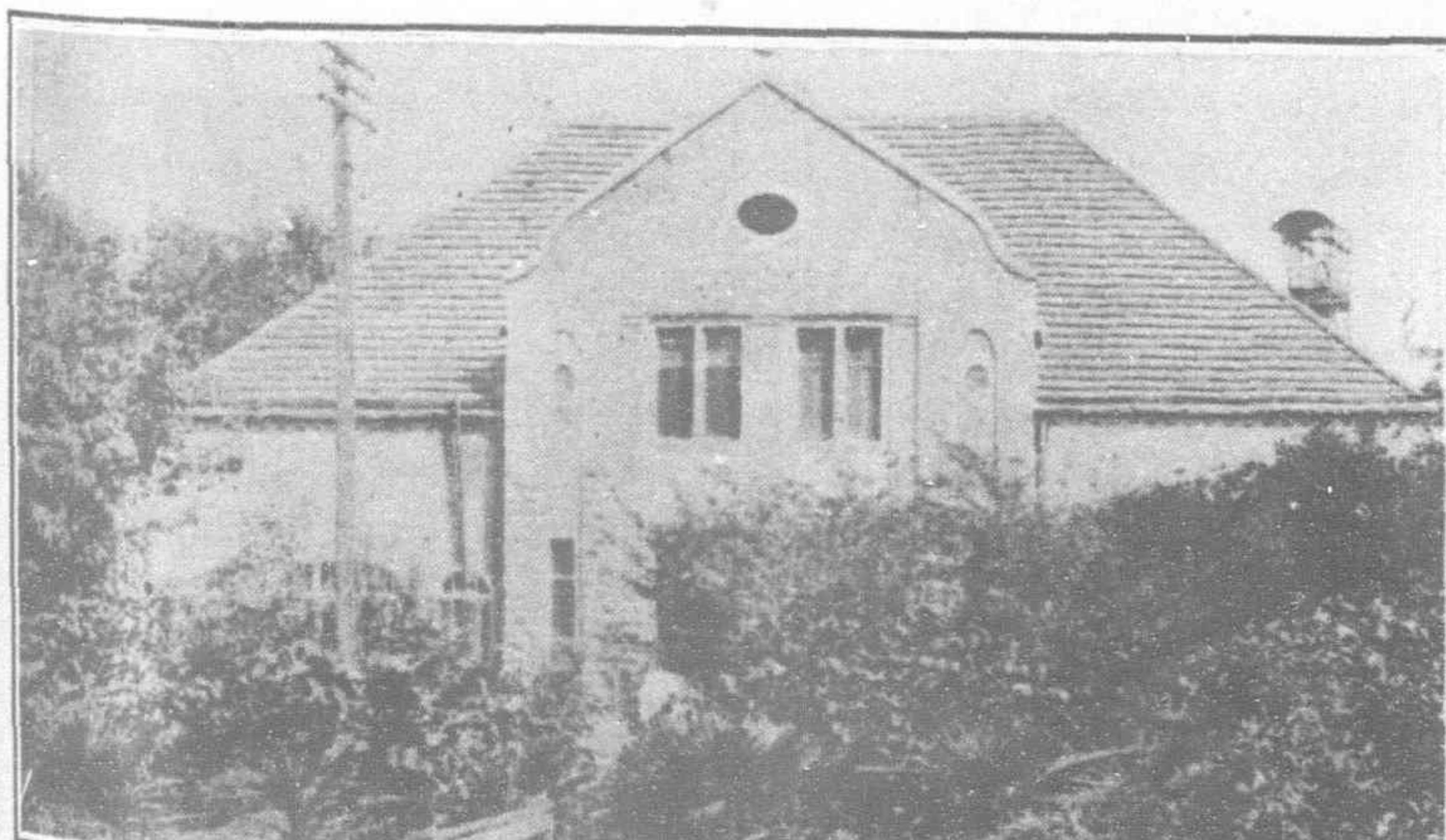
Material Yard of the Tsuchuan Colliery



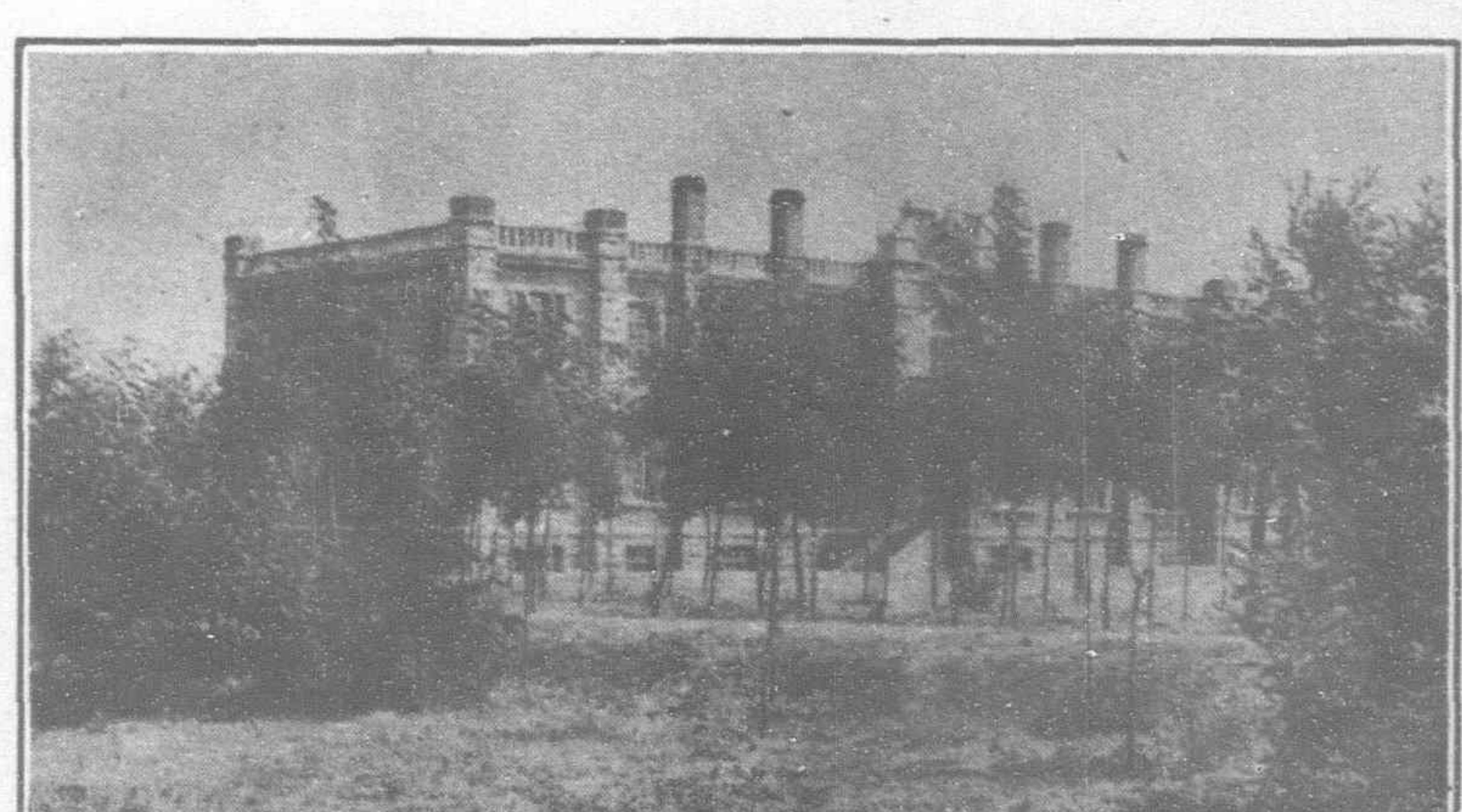
The Tsuchuan Colliery Hospital



The Tsuchuan Colliery School



Tsuchuan Colliery Administration Building



Dormitory Building, Tsuchuan Colliery

with a capacity of 70 tons per hour, but at present is turning out about 300 tons per day.

**COAL SEPARATOR AND CONVEYORS.**—The cars from both the Martha and Tsuchuan shafts are unloaded on the same boiler plate floor, and dumped into the bins passing through the screens and sorting conveyor and discharged direct from the shutes into the railway cars for shipment.

**MACHINE SHOP AND FOUNDRY.**—A fair size machine shop and foundry for general repairs is also a part of the equipment. The foundry has a cupula with one ton capacity. The machine shop is well equipped with an assortment of machine tools from all countries. I saw a Brown & Sharp milling machine, Japanese lathes from the Tsukomoto, Ikegai, Niigata, and Adachi Iron Works, a Japanese-made planer of American model supplied by the Mitsui Bussan Kaisha, three or four of the original German drilling and planing machines from the Saechs Maschinen Fabrik of Chemnitz and several smaller American tools, furnished by the Horne Company of Tokyo.

In addition there is a punching and shearing machine, drop hammer and steam hammer. The shops seem to be kept busy, especially with the all steel coal cars, over 4,000 of which are used underground. The wheels of these cars are all cast in the foundry and finished in the adjoining shop. Boiler, pump and other general repairs apparently keep this little shop taxed to its utmost capacity.

**PUMPING EQUIPMENT.**—I was unable to visit the underground workings and see the equipment at work. There are two Worthington duplex double acting pumps, with 12-in. steam cylinders, 10-in. stroke, and 7-in. water cylinder, suction pipe, 6-in., delivery 5-in., with a capacity of 245 to 450 gallons per minute at a 300-foot delivery head. The mine is equipped with eight electric and five steam pumps, a total of 13. Some of these are motor-driven turbine sets from the Okumura Electric Works of Japan.

The mine timbers are all imported from Japan.

**WORKMEN.**—About 4,000 Chinese miners are employed at present working in shifts of eight hours. They are paid 60 copper cash or about 40 cents silver, at normal exchange about 20 cents gold. Over 500 Chinese mechanics of all kinds are employed above ground. There are 250 Japanese employees of all classes, and with their families living at the mine, total 600.

The mine is under the general direction of the Shantung railway administration, and managed by Mr. S. Handa, of the government service. The assistant engineer is Mr. K. Fujita.

**OUTPUT.**—The average output is 1,500 tons per day, but this has fallen off at present to about 1,200 tons. The total output during the German management is estimated at 2,000,000 tons. The output under Japanese management is as follows:

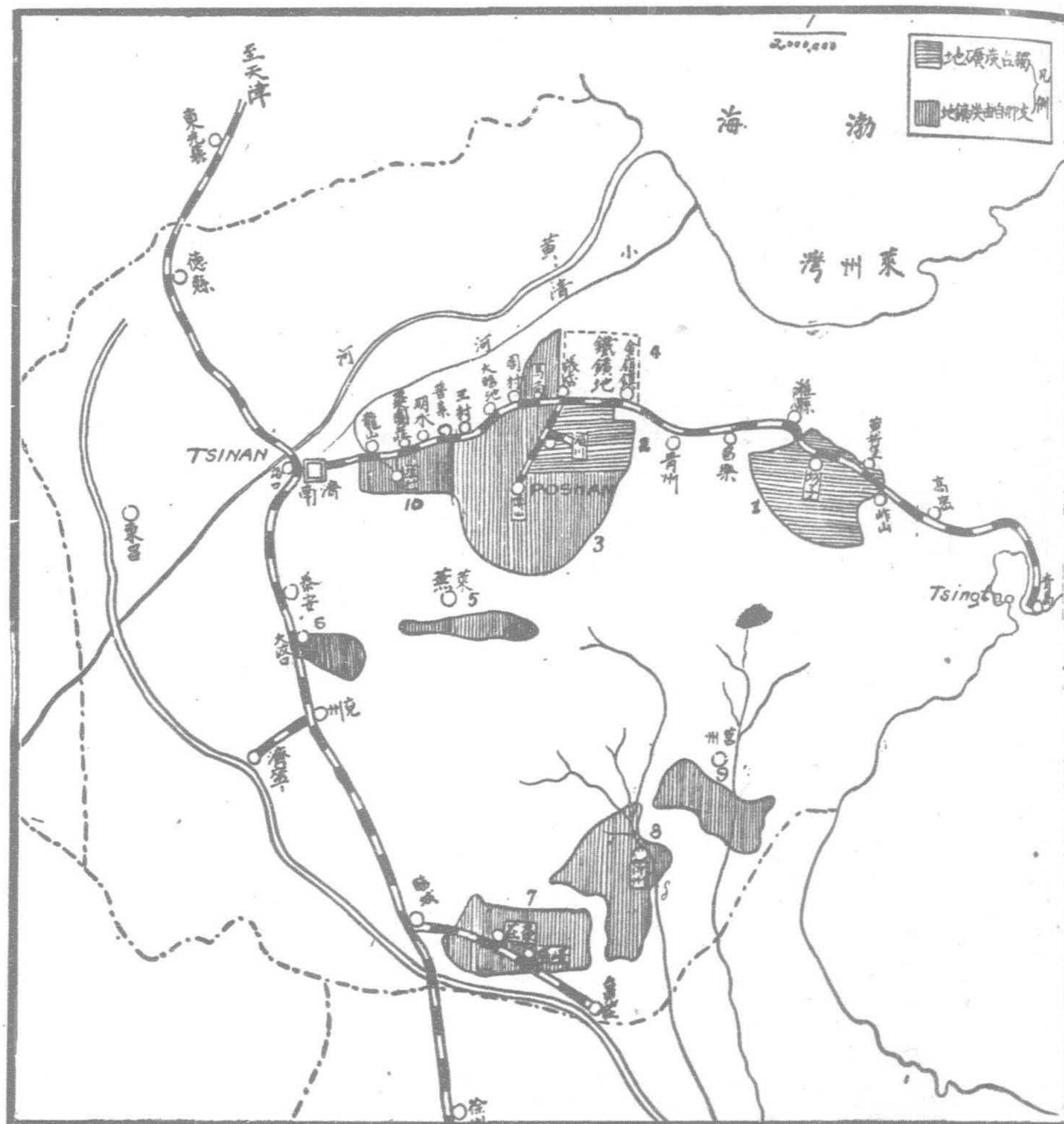
Year	Lump	Washed	Mixed	Dust	Other	Total
1916...	68,260	83,299	56,457	202,391	47,530	458,437
1917...	74,145	81,210	59,035	203,828	39,326	457,544
1918...	59,440	70,050	48,076	199,620	28,254	405,440
1919...	76,051	66,764	52,513	230,101	21,465	446,894
Nov. 1920	—	—	—	—	—	504,250

Total output under Japanese management ... Tons 2,272,565

### Distribution

Sold in Year	Province	Value	Exported Value	Bunker Value	Total Value	Value
1919...	122,474	693,101	67,799	329,545	905	5,418 191,180 1,028,064
1920...	199,359	1,033,647	170,054	901,123	12,433	89,514 377,846 2,024,284

Average price for 1919, Yen 5.38 per ton; 1920, Yen 5.36.



Map of The Shantung Coal Measures Showing Areas Worked By Japanese and Chinese.

(1) The Fangtze Field; (2) Tsuchuan Field; (3) Poshan Field; (4) Chinlingcheng Iron Deposits; (5) Li-wu Field; (6) Tawenko Field; (7) Yhsien Field; (8) Ichow Field; (9) Chinchow Field; (10) Wen Tsu-chen Field. Worked by Japanese; Worked by Chinese

Most the coal exported is of the smokeless variety and sold to the Japanese Navy.

**ANALYSIS.**—Made at the technical laboratory of the South Manchuria Railway in August 1915.

Vein	Water	Volatile Oil	Solid Carbon	Ash	Color of Ash	Nitrogen	Sulphur	Calories
A ...	0.81	8.41	72.01	18.77	light pink...	0.861	1.18	7,333
B ...	0.82	15.99	71.45	11.74	" "	1.329	0.90	8,060
C ...	0.87	12.66	75.57	10.90	" "	1.209	1.17	7,657
D ...	0.82	12.72	80.99	5.47	light yellow	1.178	0.59	8,153
d ...	0.74	14.66	77.83	6.77	soiled white	1.178	0.83	8,525
E ...	0.88	13.47	68.16	17.47	" "	0.847	0.89	7,471
F ...	0.97	13.75	77.97	7.31	white..."	1.360	1.19	7,510
No								
Name ...	2.99	5.75	80.98	10.28	light pink...	1.391	2.77	7,006
G.H. 1...	0.84	9.94	84.30	4.92	grey ...	1.270	1.31	7,440
G.H. 2...	1.23	9.31	83.03	6.43	brown ...	1.178	2.65	7,657
G.H. 3...	1.24	10.45	84.29	4.02	light pink...	1.267	1.57	7,347
I ...	0.68	10.72	81.49	7.11	soiled white	—	0.56	6,758

**TRANSPORT.**—Coal from the Tsuchuan mines is carried by the Shantung railway to the port or other distributing points along the line. From the colliery to Tsuchuan station is four miles, from Tsuchuan to Changtien eleven miles and 176 miles to Tsingtao. The present equipment of the railway detailed elsewhere in this number of THE FAR EASTERN REVIEW, embraces 708 coal cars of which about 563 are of 15 tons capacity, the balance of 30 tons each. In addition there are 75 coke cars of 15 tons capacity each for handling the output of the mines. With the increased output of the iron mines added to the collieries, the railway management states that at least 300 thirty-ton cars and 24 more locomotives will be required to deal with the traffic.

**FREIGHT CHARGES.**—As the railway administration owns and operates the coal mines the output of the Tsuchuan collieries are carried free over the line, while the freight on coal from the Chinese

owned mines in this district to the port at Tsingtau is silver Yen 61.70 per 15-ton car, less 50 per cent. rebate. This undoubtedly gives the railway a great advantage in being able to set the price for local, export or bunker sales.

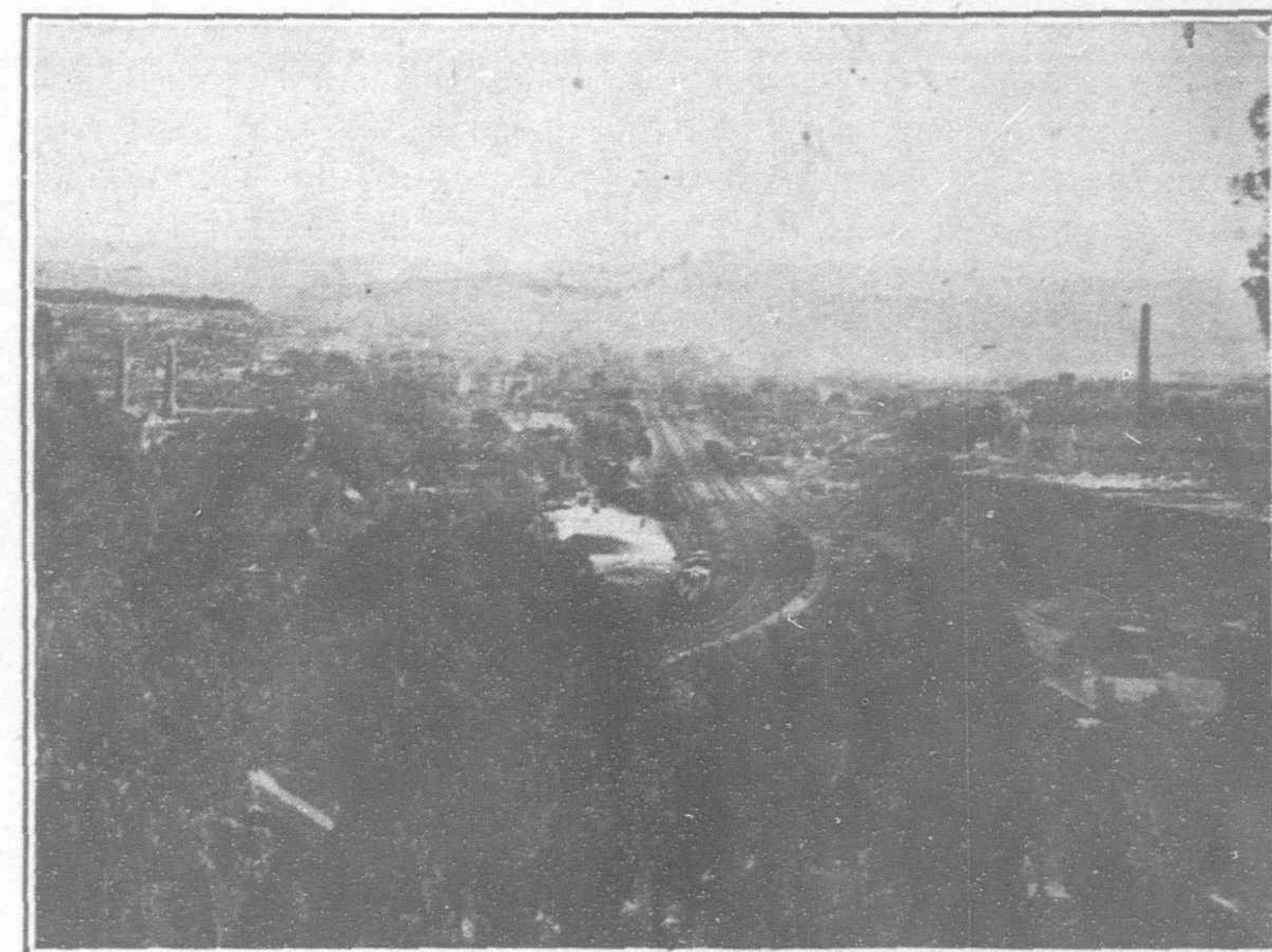
**THE THIRD GERMAN SHAFT.**—This shaft referred to the original report, with its entirely separate mining works was originally sunk for ventilating purposes. It is located about half-a-mile from the main works and alongside the branch railway that connects the mines with the main branch at Tsuchuan. In 1913, the Germans continued this shaft down to 217 meters and commenced the erection of the new and independent mining works, but before their completion, war broke out. I did not visit this shaft, as I was told that it had no equipment, and had never been used. The headgear, steel buildings, power houses and loading stations, with railroad connections, etc., however, were all completed by the Germans, ready for the machinery when they abandoned Tsuchuan in November, 1914.

**TSUCHUAN BRANCH MINES.**—In addition to the main mine, the Japanese are developing others located about two to three miles distant. The most important of these is the one at Shilichuang, which has been equipped with machinery taken from the first German Fangtze mine. I was told in Tsingtau that the Fangtze machinery had been dismantled and sent to the Chinglingchen iron mines. This is an error. About 500 tons per day are now being taken from the Shilichuang pit, and the Japanese expect to increase this materially in the future. Another new mine is being developed not far from Shilichuang, at a place called Kunlung. Work on the shafts and upper stratas is being carried on, but as yet, it has not reached the producing stage.

**THE LESSER COAL MINES.**—The mines in the immediate neighborhood of Poshan have been worked by native methods since the time of the ming dynasty. The opening of the average Chinese pit is about 3 x 6-ft. and 50-ft. deep, lined with stone or bricks. Hand winches operated by man or animal power are used to haul up the baskets of coal and to drain the mine in the same way. Some of the native mines are equipped with old-fashioned steam engines for hoisting.

There are over 200 of these small pits worked by native methods, producing an aggregate of 700,000 tons annually, or some 2,000 tons per day. Some of these mines are now being operated by Japanese interests. The map of the district shows the location of 65 of these Japanese enterprises. The life of these small mines is two to three years for the small veins and eight to nine for the larger ones. Most of the smaller mines are closed in summer owing to the difficulty in keeping them properly drained.

The capital employed for these enterprises runs from fifty to 3,000 Mexican dollars. A tax of .30 Mexican is levied per *mow*,



General View of Poshan

Company and the I-Sho yoko have gone into the coke business on a considerable scale.

**ANALYSIS OF POSHAN COAL.**—An analysis of small and large Poshan coal made by the laboratory office at Tsingtau, gives the following:—

	Small Coal	Large Coal	Lump	Unscreened
Water ...	0.58	0.54	0.40	0.49
Volatility ...	9.29	11.25	12.17	16.52
Ash ...	8.39	8.06	4.80	5.50
Sulphur ...	4.97	6.65	—	—
Solid Carbon	81.74	80.69	82.63	77.49
Cokes ...	90.13	88.75	—	—
Calories ...	8,476	8,316	7.874	7.970

## The Chinglingchen Iron Mines

The following notes on these mines are reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914:—

In the mountain range which rises in a northerly direction of about 280 and 300 kilometers from the Shantung railway, are to be found large quantities of iron ore in contact with diorite and chalk.

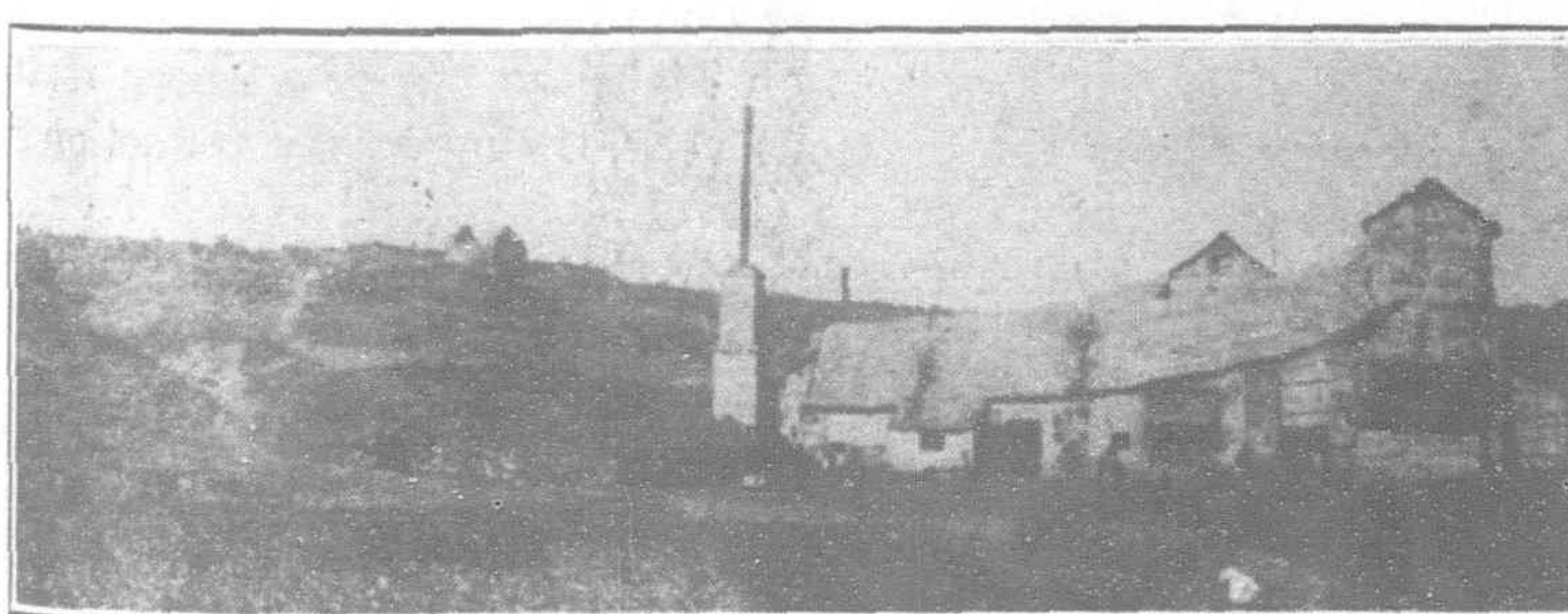
At Tiehshan the iron ore is easily traced by the remains of old mining works; there are still blocks of pure magnet iron ore, which the old miners had not the skill to work; the whole is opened up by shafts, galleries and bore holes. The hanging part is of very hard crystalline chalk, and the lower part of quartz augitdiorite. The iron stone continues regularly throughout except for trifling interruptions, and is only adulterated in the lower part with sulphur pyrites.

An average trial of the ore taken from a mass of 3,000 tons out of Gallery 1 showed conclusively:—

65.42	Fe	Spur	As
0.42	Mn	„	Sn
0.03	P	2.00	Si <sub>2</sub> O <sub>3</sub>
0.08	S	0.8	CaO
0.09	Gu	0.5	MgO

At Sypauschen where the ore is found there are not only clear traces of old mines to be seen, but also remains of an old foundry. This ore in particular contains the highest proportion of iron (66.4%) 2.8 per cent. residue, 0.02% S. and traces of phosphor. The ore is therefore the purest iron ore which can be obtained anywhere.

The ascertained supply of ore amounts all together to 49,100,100 tons, more than 20,000,000 tons of which lies in such a position that it can be worked easily and cheaply. This, of course, does not exhaust the supply by any means. The authenticated amount



Chinese Coal Mine in the Poshan District

and one and a half per cent. of the output, payable either in money or coal.

Roads in the district are exceedingly bad, and all transportation is by wheelbarrows or donkeys. Of the total output of the Poshan mines, about one-third is transported by the railway.

**COKE.**—About 150,000 to 200,000 tons of coke are made in Poshan, about half of which finds its outlet over the railway. Some Japanese firms, such as the To-wa Company, Nakamura

of raw iron still remaining amounts to more than 30,000,000 tons.

Now that the preparatory work has been accomplished in opening up sufficient ore, and it has been proved that good coke can be obtained suitable for heating purposes in the neighborhood of the Hungshan mine, it has been decided that iron works shall be erected at Tsangkou, with a preliminary two ovens with a daily output each of 130-150 tons. The preparatory work will be expedited to allow of mining being commenced in 1915.

The Germans could not carry out their intention to erect the iron works at Tsangkao, owing to the war. The Japanese have been working and developing the mines, sending the output to the Government Steel Works, at Yawata in Kyushu. The following information will bring the data on this mine up-to-date.

The Chinlingchen Iron Mines are located on the Lintze district of Shantung at Chang Pu Chuang, about four miles north of Chinlingchen station on the Shantung Railway, 170 miles from Tsingtau. They are connected with the main line by a branch that terminates at Chungpu.

**ORE DEPOSITS.**—The ore deposits at Chinlingchen extend for 10 miles along the north side of the Shantung Railway and cover an

The following analysis is by the Chinese government bureau of mines at Peking:—

	Total	Fe	Fe <sub>2</sub> O <sub>3</sub>	Fe O	Mn	Cu	Sio <sub>2</sub>	P.	S.	Moist
Outcrop ...	67.08	81.57	11.94	0.08	0.134	1.16	0.024	0.014	2.87	
Underground ...	61.24	61.18	23.22	0.07	0.054	5.74	0.037	0.105	1.18	

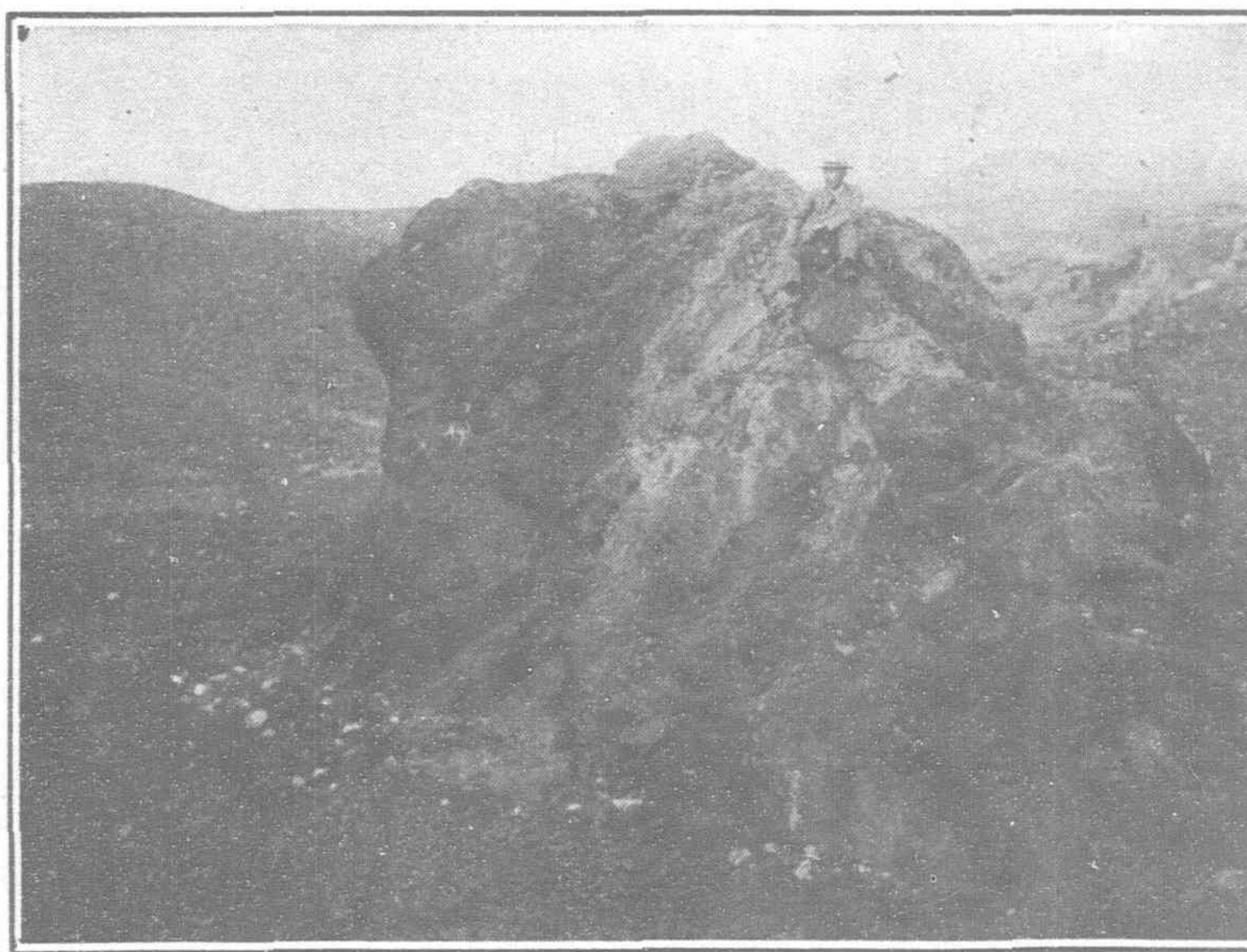
The estimate of the amount of ore in the deposits varies greatly. The original German estimate was in excess of 100,000,000 tons. Chinese engineers estimate it about 50,000,000 tons, while a preliminary Japanese survey was as follows:

*Fenghuangshan.*—Length of vein, 2.5 miles, thickness, 30 feet, survey not completed. Location on north side of hill.

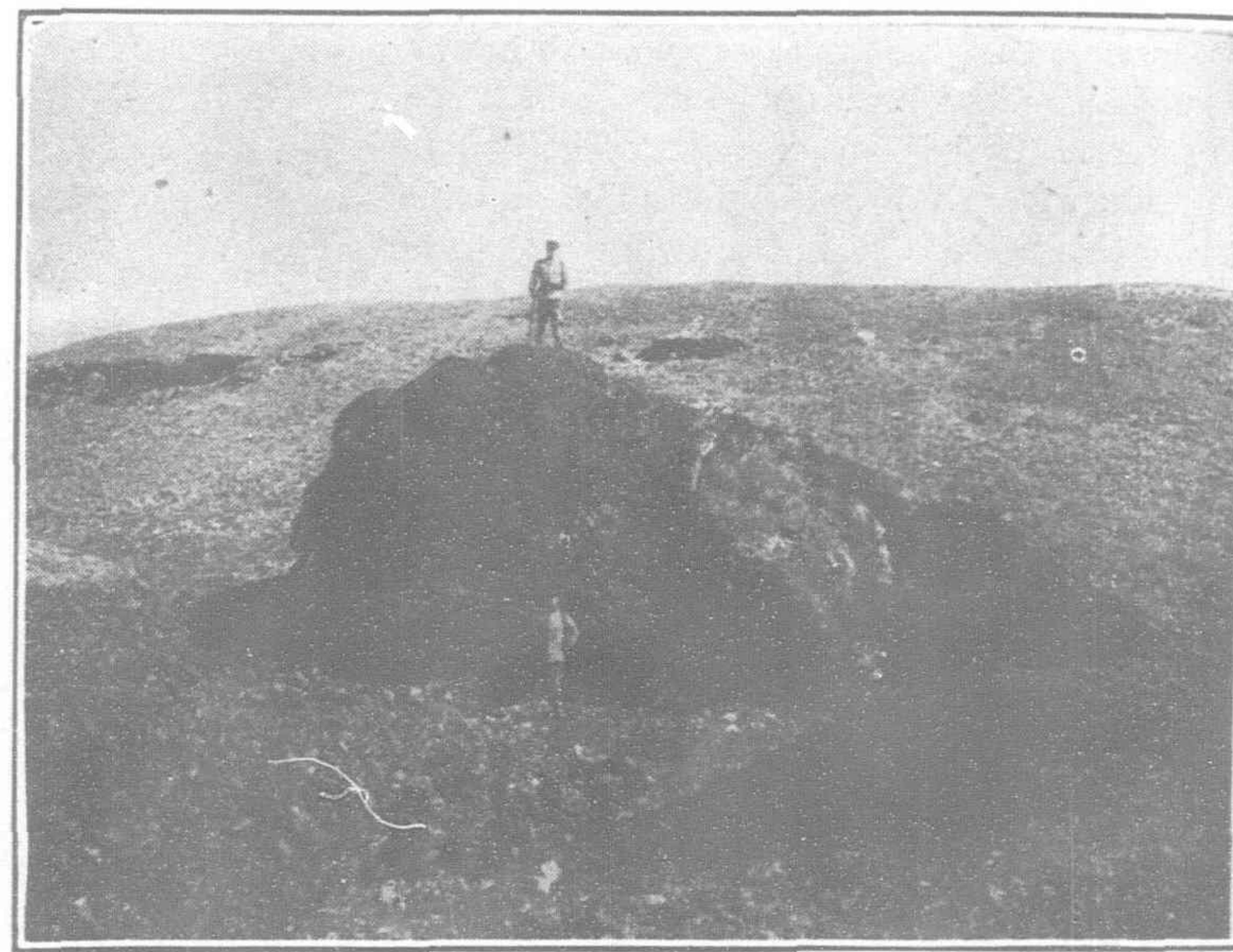
*Tiehshan.*—Length of vein, 1.4 miles, thickness 40 feet. Deposit, 11,000,000 tons above level of plain, 13,000,000 below level. Location, north side of hill.

*Yuhuangshan.*—Length of vein, 3.4 miles, thickness, 80 feet. Deposit, 63,000,000 tons. Location, north side of hill.

*Ssupooshan.*—Length of vein, 1.5 miles, thickness, 22 feet. Deposit, 17,000,000 tons above level of plain. Location, south end of hill.



Huge Iron Outcroppings on Tiehshan at Chinlingchen Mines. Old Chinese shafts are seen in the picture on the Right



area of about 170 square miles. The deposits consist mainly of Magnetite Fe 30<sub>4</sub> with a small proportion of Hematite Fe<sub>3</sub>. The following is an analysis made at the Japanese Government Steel Works at Yawata of two recent shipments:—

(1) HEMATITE FE 20<sub>3</sub>:

Original weight	...	...	1,821.710	tons
Moisture	...	...	41.210	"
Net weight	...	...	1,780.500	"
Iron	...	...	63.58	per cent.
Water	...	...	2.10	"
Manganese	...	...	0.22	"
Silicic Acid	...	...	4.94	"
Sulphur	...	...	0.10	"
Phosphorus	...	...	0.05	"
Copper	...	...	0.252	"

(2) MAGNETITE FE 30<sub>4</sub>


Original weight	...	...	4,171.120	tons
Moisture	...	...	90.470	"
Net weight	...	...	4,080.65	"
Iron	...	...	56.00	per cent.
Water	...	...	1.41	"
Manganese	...	...	0.16	"
Silicic Acid	...	...	9.95	"
Sulphur	...	...	0.358	"
Phosphorus	...	...	0.098	"
Copper	...	...	0.221	"

The Japanese estimate of the ore is therefore in excess of 100,000,000 tons, bearing out the German estimate.

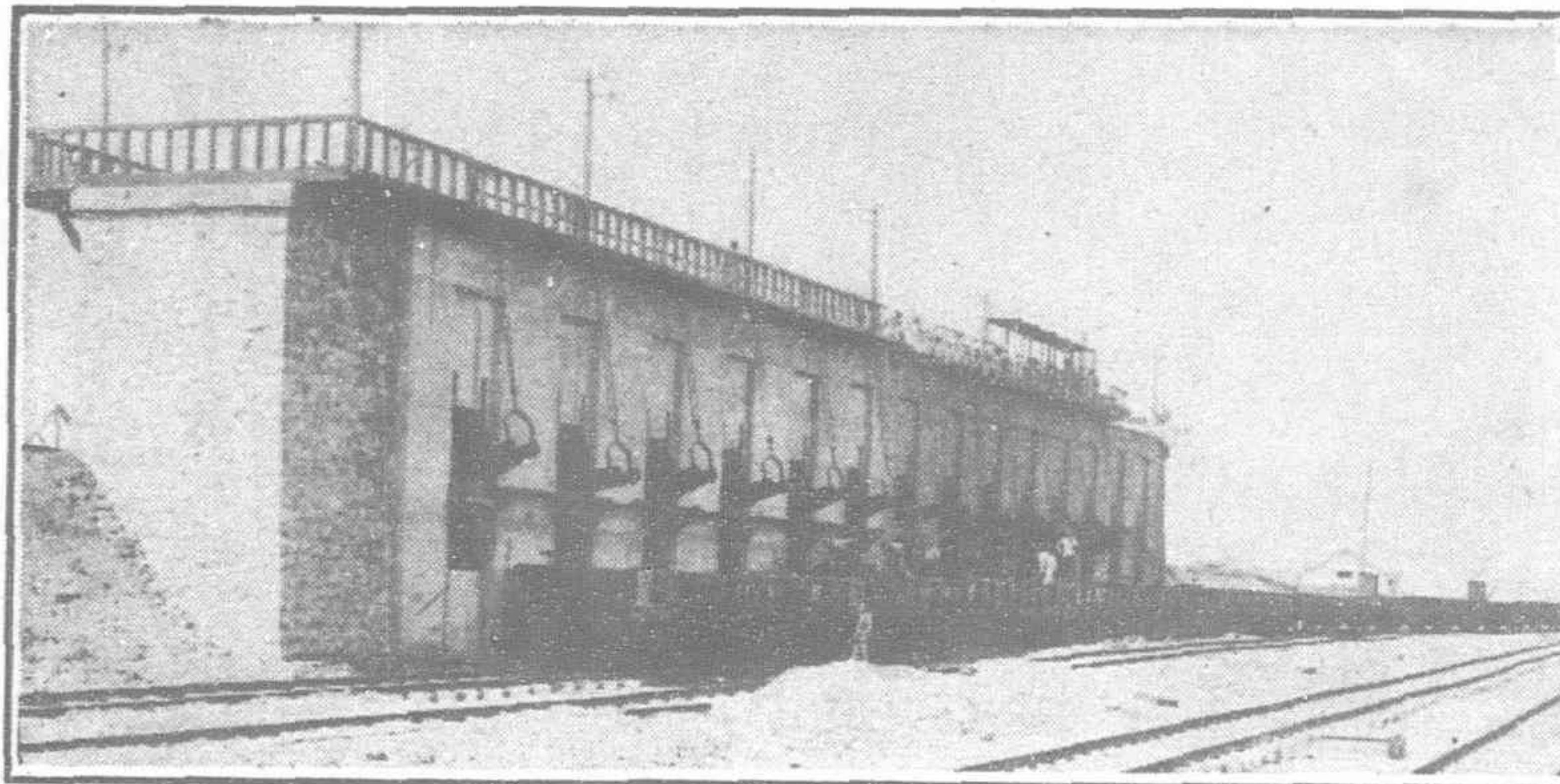
Mr. N. Senju, the Japanese engineer in charge of the mines, informed me that they had not yet completed the surveys and estimates for the entire field, confining their explorations exclusively to the deposits on Tiehshan, where they had 6,000,000 tons blocked out. No work was being done on the other deposits, and as a matter of fact, the output on Tiehshan itself had been materially decreased from the previous year, owing to the reduction in the contract with the Japanese Government Steel Works for this year. Last year's contract called for the delivery of 200,000 tons f.o.b. Tsingtau, but owing to the decreased demand, and falling off in price, the contract for the current year had been cut to 100,000 tons. The production at one period during last year reached 1,000 tons per day, but this had fallen off to the present output of about 200 tons.

The Chinlingchen mines have been surface worked for several centuries by the Chinese, and abandoned as the vein dipped below the surface. Their exploitation was being undertaken seriously by the Germans when the war broke in 1914. They began operations at Tiehshan by starting a 1,200-foot adit towards the main ore body. When compelled to withdraw on the landing of the Japanese army, the Germans had completed about 600 feet.

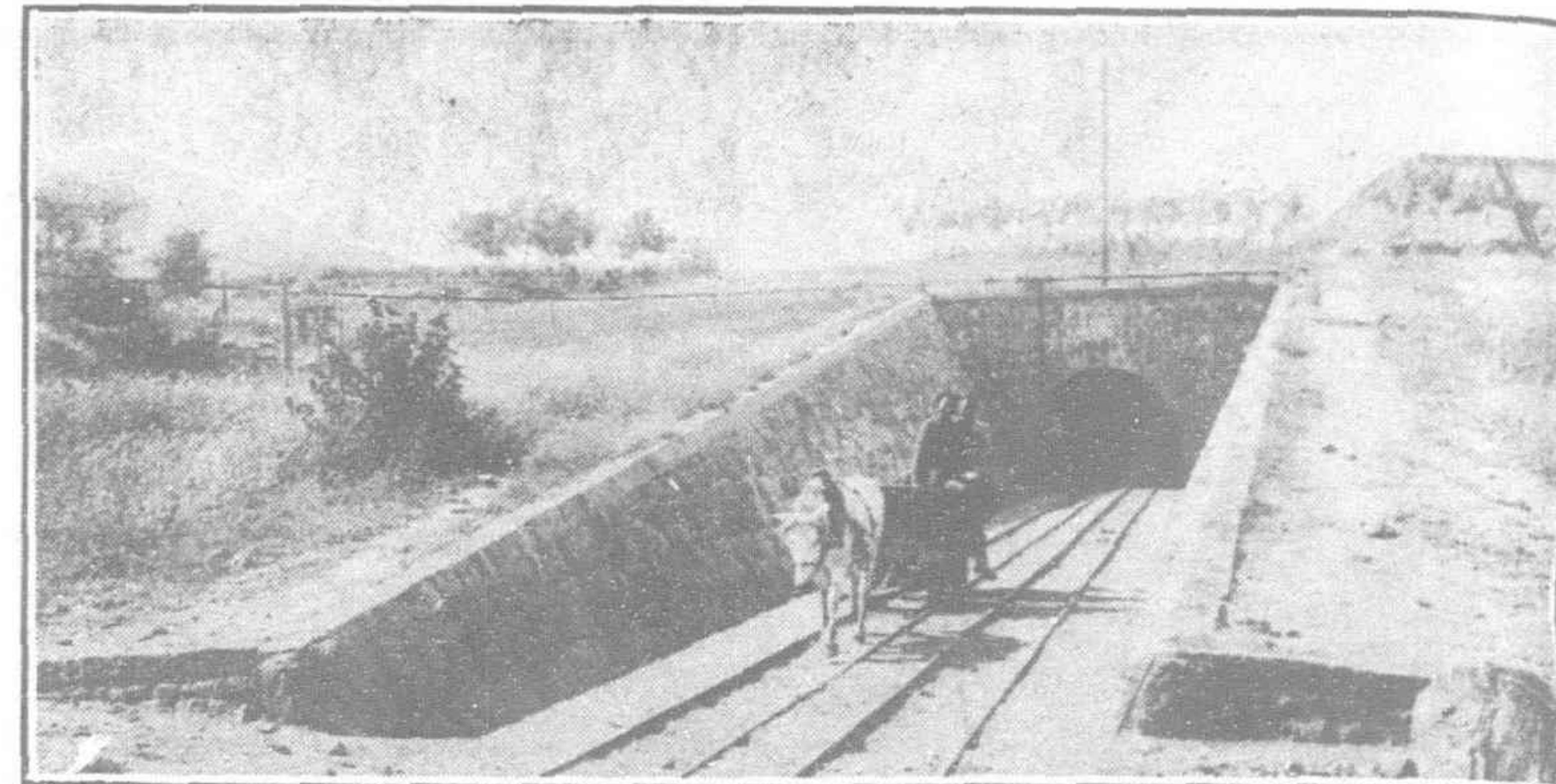
The Japanese began work in October, 1916, and by the end of 1917, reached an ore vein from 6 to 12 feet thick. This, however, was considered as an accidental exposure, so a smaller adit was excavated and at 300 feet another 40-foot vein was reached. Several



# MAP OF THE CHINLINGCHEN IRON REGION



Ore Bins and Loading Station at the Chinlingchen Iron Mines



The Main Exit to the Chinlingchen Iron Mines

cross cuts have been made from the main adit, and by means of two open cuts from the top, the vein has been exposed in other places.

The Japanese have made no attempt to exploit the mine on a grand scale, as is generally supposed, nor have they equipped it with any new machinery. The story is generally accepted that the machinery from the German Fangtze mine had been dismantled and shipped to Chinglingchen. This is erroneous. Such machinery as was taken from Fangtze was installed at a branch of the Tsuchuan Coal Mine. There is no need as yet of any hoisting machinery at Chinglingchen, as the filled ore cars are operated by gravity from the adits to the storage bins, and the empties are hauled back by mules. The only machinery at the mine is the old boiler plant equipped with Lancashire boilers, and the original German air compressor, a high class machine of the Koster patent made by Neuman & Esser, of Aachen. It is not in use. There are the necessary small blacksmith and repair shops, and residences for Japanese employees. As all the Chinese laborers live in the nearby village, no quarters for them have been provided at the mine. The one important mechanical improvement made by the Japanese is the ore bins and loading station, built near the main adit, from which several fifteen-ton cars can be loaded in five minutes.

When producing its maximum, the staff consists of a Japanese manager, about 30 Japanese engineers and foremen on the surface workings, with 20 Japanese underground and 1,200 Chinese coolies. At present about 500 Chinese laborers are employed. In addition, there are about 40 Japanese soldiers for police duty. The miners work on contract, and are paid at the rate of silver Yen 1.40 to 1.50 per square meter of ore mined, all tools, dynamite, etc., being supplied by the management. Laborers not under contract are paid 40 cents silver a day.

**OUTPUT.**—The output for the year ending March 1918 is given as follows:

Magnetite	
ore ...	78,288 tons
Hemite	
ore ...	63,965 ,,

142,253 tons

	Free Supply	Exported	Value Yen	Av. Value Per ton
1919	... ...	219,677	28,340	204,502 7.22
1920	... ...	191,459	144,859	957,406 6.61



Japanese Hospital at Changtien



Uncovering the Iron Deposit from the Top

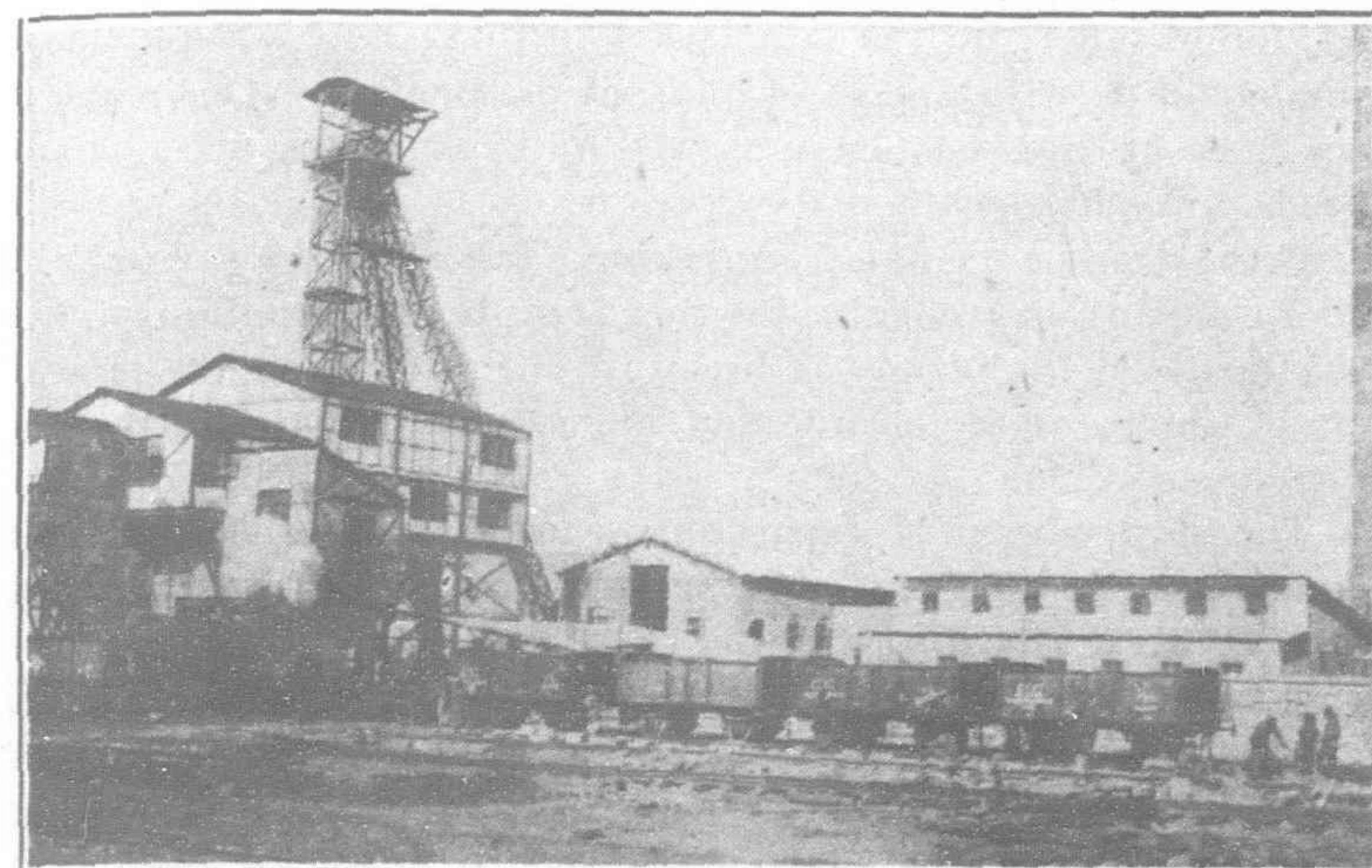
# The Chung Hsing Coal Mines

**T**HE Ichow coal field, about 15 kilometers south-west of Ichowfu is the most extensive in Shantung province, covering 6,500 square kilometers. The concession was owned by the Prefect of Ichowfu. During recent years mining has been started in five places, all in primitive Chinese fashion. Some 50 pits are being worked, at a depth of about 35 metres and a width of 1.5 metres. The coal is raised by gins and animals, and is good for cooking purposes. The output is estimated at about 30,000 tons annually.

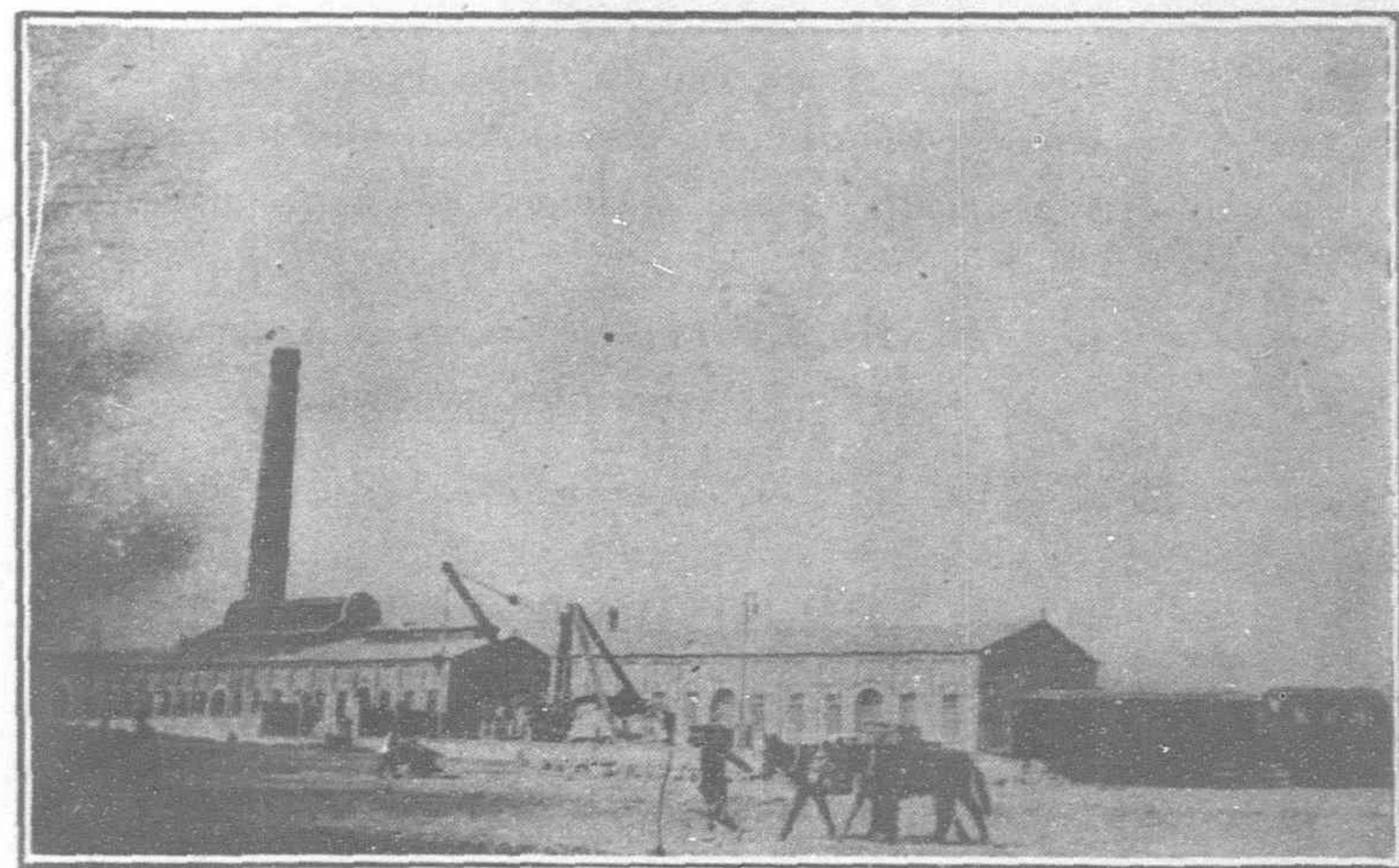
The Yihsien coal-field is considered by far the best in Shantung

modern machinery. When this shaft is in full working order 2,000 tons of coal a day can be taken from it, but at present it yields but 500 tons a day.

The machinery for this mine was supplied entirely by German manufacturers, who advanced a loan of 80,000 marks (about \$19,000) to the company in connection with the installation of the machinery. The plant includes 10 boilers, pumps, elevators, electric machinery, and cars. The company operates 27 miles of railway in connection with the mine, and for the construction and equipment of this railway German capital and materials were used.

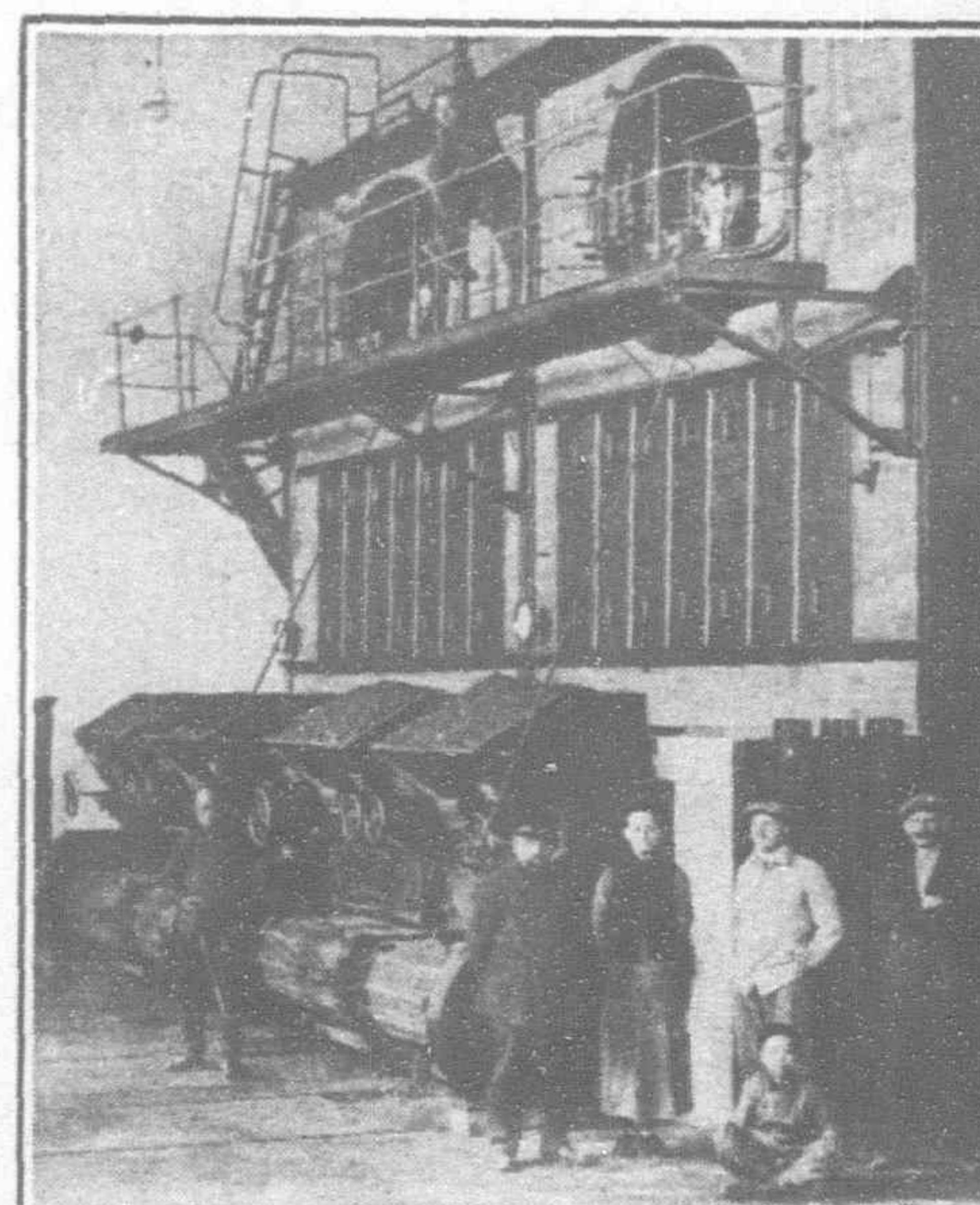


General Views of the Principal Plant, Chung Hsing Coal Mines

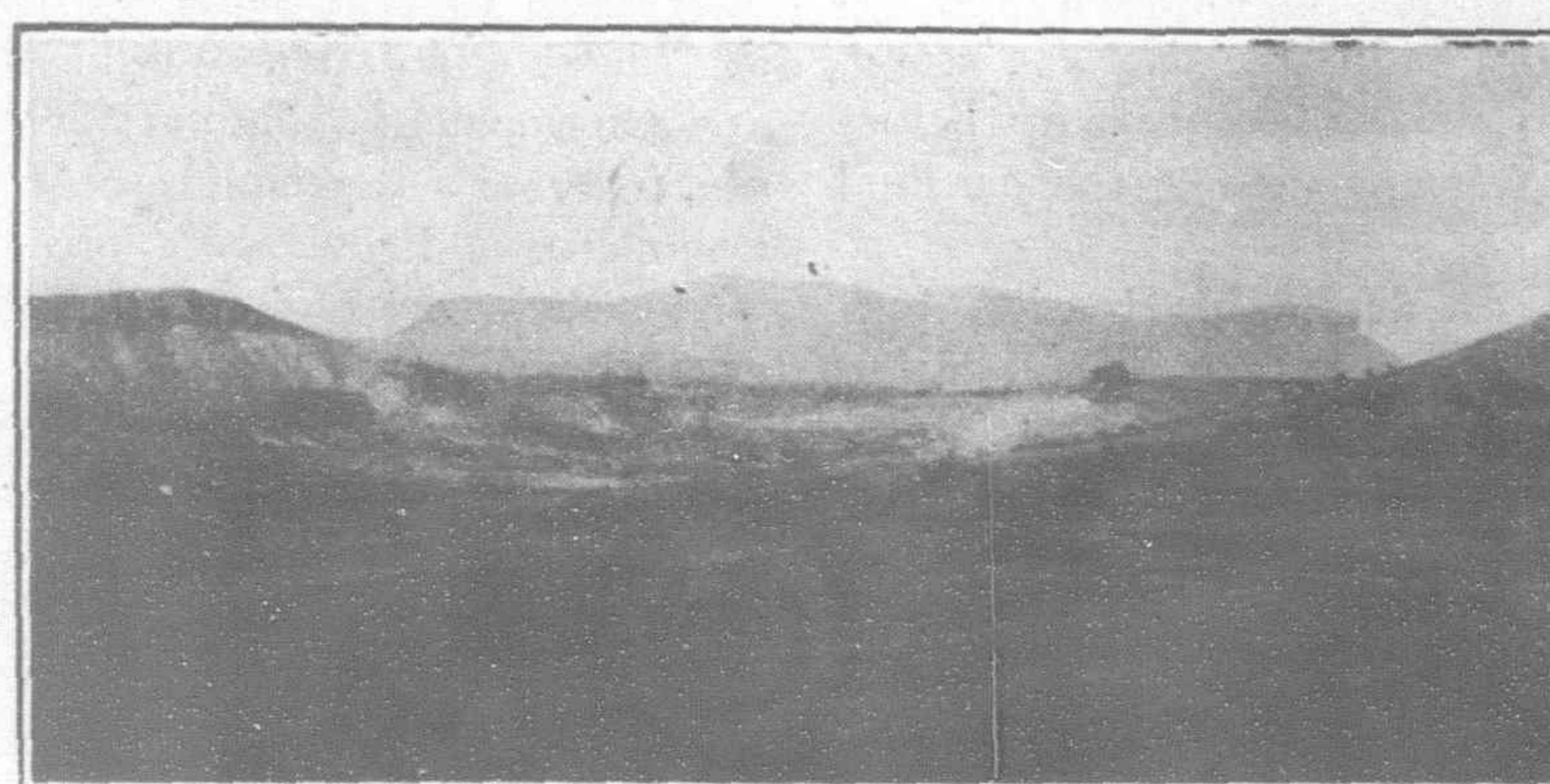


as regards stratification of the layers, thickness of the seams, and quality of the coal. Besides coal, there is also iron ore of good quality, but not yet worked. The coal-field is in a mould 30 kilometres long and 8 kilometres deep, the upper seam has a thickness of from 2.5 to 10 metres, and the lower, from 0.8 to 1.12 metres. Beyond the mould the field is reported to extend some 10 kilometres in a westerly direction, to near the Tientsin-Pukow Railway, which has built a branch line to Tsaochwang, and has contracted for 60,000 tons of coal annually. Some 60,000 tons are being coked annually. The Yihsien coal-field belongs to the Chung Hsing Mining Company, which was started in the year 1880. In 1898 the company was transformed into a German-Chinese company, and was granted a concession for mining with machinery, a field 100 *li* in circumference, and for a railway from the mine to the Grand Canal. In 1908 the two German shareholders were bought out, and the company, which until then had worked with a capital of Taels 800,000, became again a purely Chinese limited liability company, with a capital of Taels 2,200,000, of which the provincial government holds Taels 100,000.

The capital of the concern was again increased to Taels 3,500,000. The company operates eight shafts and has just equipped its newest shaft with



Boiler Room of Chung Hsing Coal Mines



General View of Yihsien Coal Fields

Previous to the construction of the Tientsin-Pukow Railway, the company's products were shipped via the Grand Canal, but now practically all of its coal is shipped over this railroad. The company states that shipping over the canal costs 3 cents Mexican a ton-mile, while shipping over the railroad costs but 2 cents. The coal, which sells at the mine for \$2.25 gold a ton, is bituminous and is said to rank with Kaiping coal. The company claims a total of 4,000 tons a day capacity, and besides makes large quantities of coke.

The chief engineer and the first assistant of this company are Cantonese trained at Tongshan in Chihli. They have had no foreign assistance in the construction and operation of the company's plant. The chief engineer receives \$120 gold a month and his assistant one-half this sum. All of the labor in the mine is on a contract basis, the native miner making an average daily wage of about 10 cents gold. There are about 800 men employed on the company's premises. The Tientsin-Pukow Railway has constructed a branch line from Lincheng to Yihsien, where it connects with the railway owned by the mining company, thus providing a through rail outlet to the market for their coal.

# The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING

FINANCE

COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, FEBRUARY, 1921.

## Lest we Forget!

"It wants more courage to make peace than to carry on a war. *People who demand war and criticize peace are generally weak people who have never fought.*"

ELIHU ROOT, the foremost American statesman of our time.

## Shantung

SINCE the Judgment of Paris, 1919, Shantung has been on many lips and in many minds. The name of this Chinese province has been advertised almost as successfully as a celebrated soap. Kiaochau, too, has become very nearly as well known as the chow-chow pickled and put up by the author of the 57 varieties. Almost two years have elapsed since Shantung became a *cause célèbre* rivalling the Dreyfus or the Maybrick case, not to speak of the Jameson raid. Nevertheless, no newspaper on earth has seen fit to search out for itself the facts to be found in Shantung. Fuss and feathers have monopolized attention, facts have been deemed of no importance.

The survey of Shantung, to-day, given in this issue of THE FAR EASTERN REVIEW speaks for itself. Mr. Rea has made his own independent investigation. He has not sought to make out a case for or against Japan, China or the Akound of Swat. He has sought, found and presented facts. Experience inclines us to the opinion that this impartial and thorough presentation of serious and very interesting facts will be appreciated by all who are really trying to do business in the Far East.

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## Be Just and Fear Not

THERE is, as we know, a cause for everything. There is always a cause for anger. When Cain slew his brother, Abel, he thought he had good cause for anger; undoubtedly, he believed that Abel had come between him and God. He was wrong, of course, and God's punishment of Cain has been held up before the youth of the world as a solemn warning against the cardinal vice of anger.

There is a cause for the present deplorable tension that undoubtedly exists between America and Japan. The tempter has been busy in both countries, stirring up anger, seeking to slay a friendship that existed from the moment in which Japan came out into the world as a member of the modern family of nations. Enemies of Japan and America are gleefully hoping that anger will push reason out of the way and bring about a rupture that cannot be desired by any patriotic, intelligent Japanese or American.

Now, seldom in a quarrel is right absolutely upon one side of the issue. Japanese would not be easily stirred to anger if Ameri-

cans were more disposed to listen to reasonable presentations of Japanese grievances. Americans have their faults, as all human beings have faults, but there is no more fair-minded people than those of the American Commonwealth. "Be just and fear not" is the guiding principle that dominates the vast majority of Americans.

Japan has not been given a square deal by the Far Eastern press or by most of the American newspapers, chiefly because the anti-Japanese propagandist has debauched the news of Eastern Asia. The story is one of the most unpleasant that has ever offered itself to a reporter. It will be told. Meanwhile, however, the American friends of Japan would be lacking in true friendship were they to close their eyes to certain Japanese facts that stand between the Japanese empire and national security.

We do not agree with those who glibly denounce "Japanese militarism" and who seek to delude the world into visioning Japan as "The Prussia of the Far East." Militant nationalism, as personified, for instance, by the late Theodore Roosevelt, is a fine thing. China could do with a dash of militant nationalism. Our national story from first to last places us well up front among the militant nations. We like peace, but we are ready to answer the nation's call at the drop of the hat. So, taking a fair view of the growth of modern Japan, we recognize the fact that Japanese militarism has never menaced the people of Japan; while, looking at the present state of China, we see clearly that Chinese militarism does menace the people of China.

The old "sabres" of Japan have earned the gratitude of their Emperor and their people. Do they seek to cap their good work by a manifestation of patriotic sound sense? We are willing to credit the military men of Nippon with good judgment as well as unwavering patriotism. Therefore, in the spirit of frank friendship, we say to the military men of Japan: "Put a curb upon the temper of your soldiers. The world is in no mood to sustain a power that builds upon the sword, alone. Swagger is not essential to good soldiering. Don't make a parade of swords and bayonets. Remember, also, how it was a shot carelessly fired by a Filipino insurgent killing an American non-commissioned officer at San Juan del Monte, Manila, that kept America in the Philippines. A few more incidents like the Langdon case might prove expensive to both Japan and America. Japan's weakness is the cockiness of too many of her soldiers. When friendly Americans dislike and condemn certain features of the Japanese military system, the Japanese general staff will do well to uproot those evil features. The most cordial goodwill suggests this friendly advice."

\* \* \*

## The Right Kind of Chinese-Japanese Friendship

SIGNS are not wanting of a serious resumption of the right kind of Chinese-Japanese friendship. In business as well as in official circles, Chinese and Japanese are learning the lesson that friendship pays and enmity is calculated to be expensive. Militarism might prove the ruin of both Japan and China. The interests of Chinese-Japanese business are opposed to the ambitions of Chinese and Japanese militarists.

On the night of January 26, the Japanese Chamber of Commerce of Shanghai entertained the leaders of the Chinese Chamber of Commerce and several important things were said and done. Mr. Y. T. Nieh, the chairman of the Chinese Chamber, made a very excellent speech.

"There is much talk to-day," said Mr. Nieh, "of promoting cordial and real friendship between China and Japan. As a matter of fact, China and Japan have been intimate friends as far back as the Tang dynasty. We offered a cordial welcome to our Japanese neighbors even during the operation of the Closed Door policy against Europeans. As nations and individually, Chinese and Japanese are old friends and neighbors, while Europeans are new acquaintances and our guests. It is natural that the tie between

old friends and neighbors should be stronger and the intimacy closer than with new acquaintances and guests coming from distant parts. Thus, it is not surprising that the ever intimate friendship between China and Japan has not been seriously affected by the Chinese-Japanese war. This was proved by the fact that the people of China whole-heartedly supported their Japanese neighbors during the Russo-Japanese war. While nominally neutral as a nation, the people showed their natural feelings by cheering each Japanese victory. Our people have never sought the injury of Japan.

"Yet, to our regret, we have seen the serious decline of this ancient friendship between two neighboring peoples. Observing Japan's growing national prestige, an anti-Japanese feeling has grown apace in China, because of disappointment. In his recent speech to the Japanese Diet, the premier of Japan stated that the Japanese government appreciates the importance of strengthening Chinese-Japanese friendship, that his government is bending efforts to that end and that anti-Japanese feeling in China has not resulted solely from Japan's policy in China. We will not dwell upon the cause of this anti-Japanese feeling, whether it has resulted from Japan's policy or acts, or from other causes. So long as the Japanese government appreciates the vital importance of preserving Chinese friendship differences and difficulties can be removed, and the ancient accord restored. We Chinese will readily welcome real Japanese friendship; but permit me to say that friendship rests in deeds and not in mere words, in sincerity and not in formality. I sincerely hope that for the future intimate friendship between Japan and China will be manifested by the people of the two countries in practical application and will not be confined to polite exchanges between publicists and diplomats. As we are tradesmen, I will say within the scope of a tradesman that business cannot last a day or even a minute without honesty and sincerity. I shall lay upon myself the burden of bearing my own part of this word, sincerity; and I hope you gentlemen of our sister country will do the same."

That is one of the best speeches delivered for many a long day in China. Is it not a model of politeness and plain truth? The Japanese merchants and officials in China will do well to take it to heart and to whisper it—not too softly—to a general or colonel or two across the Sea of Japan. Japan can have the friendship of China, but only by paying for it in the only coin that purchases friendship—the golden currency of honest, friendly acts.

\* \* \*

## Korea's Economic Prospects

SELDOM, is it, that anything wholesome or truthful about Korean conditions appears in the Shanghai press, where rampant antagonism to anything and everything Japanese points each moral and adorns every tale. It is, therefore, with pleasure that we reproduce the following timely editorial under the above caption printed in the go-ahead *Shanghai Times* on January 28:

In one way or another of late we have been hearing so much regarding discontent surging in Korea that it is a positive relief to read of something much more pleasing and, incidentally, much more accurate regarding that country, which the impartial testimony of those competent to judge proves convincingly is infinitely better to-day under the guidance of the Japanese than has ever been the case in the history of Korea. An article in a recent issue of "The Far East Commercial Supplement" makes this abundantly clear. In this article, from the pen of Mr. S. Minobe, governor of the Bank of Chosen, we have facts and figures presented in a careful manner which plainly show that the economic development of Korea during the past decade, namely, since the annexation of the country by the Japanese, has been truly wonderful, creditable alike to the Japanese and all to the good of the Koreans themselves. We find that during the period mentioned the commercial prosperity of the country as revealed in its imports and exports has increased no less than sevenfold. In 1910 the value of Korea's exports was Y.29,113,581, imports Y.41,658,876, a total of Y.70,772,357, while in 1919 the total value had expanded to no less a sum than Y.506,507,832. These figures are eloquent of what the country is capable of doing when guided in the proper direction, and they augur well for Korea's future prosperity. They are also infinitely more convincing regarding Japan's treatment of the Koreans than

the many loose and obviously prejudiced statements that one hears and reads so often regarding the country. Korea has a great future. Even to-day she is still very largely an agricultural country, as her manufactures are still in the incipient stage. Korea, as is pointed out in the article above referred to, is ideally situated as a commercial country, and in consequence its trade can be extended in many directions, with Japan to the east, Manchuria and Siberia to the north and China to the west. To this geographical advantage can now be added its excellent communication services and banking facilities. Best of all is the undoubted fact that, despite the croaking of the malcontents and the loose statements of the prejudiced, the commercial ties are growing more intimate year by year between the Japanese and the Koreans and are proving one of the best agencies to bring about the much-desired sympathy and goodwill between the two countries now so closely united. As Mr. Minobe says "Common business interests will do what other interests may fail to do," and he very truly adds that "the economic development of the country is most desirable for this as for any other reason."

Even in agriculture, in which the Koreans have been engaged from time immemorial, there is, despite the excellent work of irrigation and reclamation that has been done during the past ten years, plenty of room for further development. There is also a specially bright future for the silk industry. Indeed progress in this direction has been so rapid that Korea, along with Japan proper, may yet rank among the chief silk-producing countries of the world. In the mining of iron and coal very considerable progress is to be noted. Probably the chief factor that has contributed to the very satisfactory development to which we have referred is the laying of the railways, which has been most effective and far-reaching in its results, and what has been done in this direction will, we have no doubt, be surpassed in the near future.

Altogether the economic development of Korea is progressing most satisfactorily and that the country is in good hands and is moving in the right direction is evident from the facts and figures above mentioned. They are much more convincing than all the claptrap of the discontented and the indiscrimination shown by the prejudiced.

The newspaper that publishes the pleasant truth is believed and respected when it resorts to friendly criticism. In this imperfect world, no nation or person is perfect. We have all much to learn, to do and to undo. Japan carries a heavy cross in Korea. Only a policy of prudence and patience and kindness towards the Koreans will ever wipe out the black smudge of the "abdication" era. To fair-minded, practical people who know the sins as well as the sorrows of the Koreans, Japan's original errors seem to offer no good reason why we should unite in making her burden heavier, her task more difficult and the future of Korea more indefinite or more dangerous.

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## The Chinese Rolling-Stock Loan

THE Chinese ministry of communications has arranged with a group of 27 Chinese banks for a loan of \$6,000,000 at 8 per cent. for the purchase of rolling-stock for the Chinese government railways. The terms are as follows:

- I. The ministry of communications will issue a loan for the purchase of railway cars and locomotives, known as "The 8% Short-term Railway Car Loan of the Ministry of Communications."
- II. The total amount of the loan shall be \$6,000,000, Peking currency.
- III. The bonds of the loan are to be in three denominations, namely, \$10,000, \$1,000 and \$100. The bonds shall not be registered.
- IV. The bonds shall bear interest at the rate of eight per cent. per annum, payable on the 30th June and 31st December of each year.
- V. In addition to the yearly interest, these bonds will be entitled to a bonus of two per cent. of the unpaid profits of the Peking-Hankow Railway as shown in the annual general statement of accounts of the said line. The bonus shall be issued on the 31st December of each year when the interest payment is made.
- VI. The principal and interest of the bonds shall be secured by the cars and locomotives purchased and also by such an amount of profits of the Peking-Hankow Railway as equal to the amount of the loan, which has not been pledged for any other purpose.
- VII. The bonds shall be sold for \$95 per \$100 face value.
- VIII. The term of repayment of the loan is three years. In the first year only interest is to be paid and commencing from the second year the principal of the loan will be paid by half-yearly instalments. The repayment of principal will be made by means of drawings, which will be held in Peking, when one-quarter of the whole amount of the loan will be repaid, that is \$1,500,000. The whole of the principal of the loan will be repaid on the 31st Decem-

ber of the 12th year of the Republic. IX. The payment of principal and interest will be made by such bank or banks as designated by the ministry of communications. X. Interest for the bonds shall be payable on the day following the payment of the bonds. XI. All the railways to which the purchased cars and locomotives, have been assigned, shall pay to the banks, which have underwritten the loan, certain sums towards the reserve fund for the payment of principal and interest of the bonds. XII. These bonds may be used as reserves of any bank or security of any member of the staffs on the different railways or as security to be deposited by the express companies or contractors. These bonds may also be sold or mortgaged or used as security for any other purposes. The coupons of these bonds shall be accepted at the date of interest payment as cash at any of the railways. XIII. The custodians of the bonds shall be punished in case of any fraudulent actions in connection with the bonds in the same manner as any abuser of the public bonds. XIV. At each drawing when the principal of the loan is paid, supervision will be exercised by the government auditors in company with the officials of the ministry of communications. XV. The regulations shall be valid on the day of promulgation.

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## The China Consortium

IN his speech at the China Association dinner, Sir Charles Addis had several important things to say with regard to the new Consortium and how it differs from the old. Under the agreement recently signed in New York, the four groups completely surrender their separate and individual interests, and the old *régime* of spheres of interest is abandoned. All these interests will in future be pooled. Thus one important source of friction will be removed, for each group will share in the general pool in agreed and defined proportions. With regard to the Shantung railway, which is dealt with in the Treaty of Versailles, Sir Charles explained that this question does not lie within the province of the Consortium, and it is obvious that it can only be reopened by the parties to that Treaty or the League of Nations. Unification of the railways of China, impossible under the old system, is one of the main objects of the new Consortium. It is proposed to set up a railway board to administer the system as a whole. The new Consortium, therefore, marks the beginning of a new era in the development of China which should bring marked benefits to her and ensure a minimum of friction amongst the Powers involved. It will be noted that Sir Charles made it clear that the governments of the four different countries concerned, Great Britain, France, Japan, and the United States, were actually responsible for the idea of substituting co-operation for conflict.—*The Times*.

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## “The Far Eastern Review” and the Shantung Question

By George Bronson Rea

IN previous articles THE FAR EASTERN REVIEW has attempted to throw light on many of the questions that stand in the way of harmonious co-operation between the nations for the uplifting of China. In this number is found facts that dissipate many of the misconceptions concerning Japan's activities in Shantung. As far as I have been able to learn, no attempt has hitherto been made to ascertain upon the ground the truth about Japan's development of Tsingtau. Most of the sensational articles and reports concerning Japan's alleged unfair practices in Tsingtau have originated either in Peking or in Shanghai and from these points have been disseminated throughout the world in pursuit of a set policy to discredit and injure Japan.

The favorite charge against Japan is that she is planning to dominate Shantung, and, by discrimination and other questionable

practices, to exclude other nations from equal opportunity in developing its trade and resources. In support of this statement, it is further alleged that the files of the United States state department are overflowing with reports containing concrete and specific evidence which convict Japan of double-dealing in securing for her nationals the monopoly of trade in Shantung. These statements may be true, but if they are, I am satisfied, after careful inquiry on the ground, that they did not emanate from American firms or interests in Tsingtau. If such reports have been submitted to the state department, other reports exist which nullify their value.

The highest American authority in Tsingtau is on record that the great growth of Japanese business interests in the port is due to the intelligent and far-seeing direction of Dr. M. Akiyama, chief civil administrator, and that if Americans and Europeans have not availed themselves of the many business opportunities, it is because they were preoccupied with other more pressing and important matters arising out of the war. *It has not been due to any unwillingness on the part of the Japanese authorities to extend privileges to other than their own nationals.*

The Japanese civil administration has placed itself on record that all inducements offered to industrial enterprises within its jurisdiction are open to all parties, irrespective of nationality. Furthermore, the Japanese authorities have expressed not only their willingness, but also their hope that American citizens will unite with Japanese subjects in developing the commercial and industrial possibilities of the port.

Many of the misconceptions surrounding Japan's position in Shantung arise from the note addressed to the Chinese foreign minister on May 25, 1915, by the minister of Japan, which dealt with Japan's conditions for the restoration of the leased territory to China. These conditions provided for the opening of the whole of Kiaochau as a commercial port; *establishment of a Japanese settlement in a locality to be designated by the Japanese government, and the establishment, if desired by the Powers, of an international settlement.* For at least four years, these conditions were commonly accepted as the basis upon which Japan would restore the territory to China; and, as foreigners watched the rapid development of the city, with its houses and factories all owned by Japanese, the conviction became settled in their minds that if an international settlement were eventually created, the business heart would remain under the control of Japan. It will take some time to dispel this idea.

Without following all the details of the various documents that mark the changes in Japanese policy regarding the transfer of Kiaochau, it may be said that the Japanese government has swung around in favor of an international settlement *without an exclusive Japanese concession.* As far as I can gather, the Japanese idea of an international settlement in Tsingtau differs radically from that which finds expression in the foreign settlements at Shanghai. They point to the fact that the international settlement at the latter place is a focus for trouble, the headquarters of Chinese revolutionary societies and movements, and a refuge for Korean and other conspirators, all safe from police interference. The Japanese believe that if Tsingtau is to be internationalised, provision must be made for proper police control by some competent authority, and that this sovereign Power should be China. The Japanese point seems to be well taken, as the creation of another international port that will serve as a safe refuge for conspirators against the authority of the central government of China should be guarded against in the interests of all nations. The settlement of this question now rests with China.

The official statement issued by the Japanese foreign office on June 15, 1920, in connection with the Shantung question is printed in full on pages 85-86 of this number of THE FAR EASTERN REVIEW. It will be seen from this document, that the Chinese government takes the position that as China has not signed the Peace Treaty with Germany, she cannot negotiate directly with Japan on the question of Tsingtau on the basis of that Treaty. The Chinese government also defends its refusal to negotiate with Japan direct because it is alleged that the people of China have assumed a strongly antagonistic attitude against such direct negotiations. In

other words, the Chinese government, acting upon outside advice, has now determined to have this question brought before the League of Nations or some other international convention.

It is doubtful at this time, whether China will be permitted to seek a solution of her Shantung troubles by resort to an international conference, as the original issue has since been expanded to cover the application of the Manchurian Treaties arising out of the Twenty-One Demands. China, at the Peace Conference, lost her golden opportunity to have the Shantung question adjudicated on its merits as a separate issue. In the face of the secret agreements, under whose provisions Great Britain, France, Italy and Russia were compromised to support Japan at the Peace Conference, the Chinese delegation (influenced by their American advisers), insisted upon converting the Conference into a court for the trial of Japan.

In explaining the attitude of THE FAR EASTERN REVIEW on this question, it may be said that in response to an urgent cablegram from Peking, the publisher of this magazine obtained from the American secretary of state in May, 1915, an assurance that the American government would urge an international convention at the termination of the war in which the *whole* case of China could be presented and her status definitely defined for all time. On three subsequent occasions, when confronted with serious Far Eastern questions, the state department publicly reiterated and emphasized its set determination to refrain from any direct intervention in Far Eastern affairs, no matter what might arise, until the termination of the war, and then at the Peace Conference [or a separate convention to be called for the purpose], to have the *whole* case of China brought up for discussion and adjustment.

This brief outline of facts will explain to our readers why THE FAR EASTERN REVIEW has criticised the attitude of the American and Chinese delegations to the Peace Conference. With our knowledge of the facts, we were justified in believing that when the time arrived to carry out the above promises to the American nation, the status of China could have been amicably settled on a basis equitable to all concerned. We were, therefore, opposed to any course which rejected this golden opportunity and which concentrated the fire of the delegation upon any one nation, especially when that nation was Japan, who held the promises of the other powers to support her claims. From the outset of the negotiations in Paris, we advocated that the promises of the state department be lived up to and China's problem be placed before a separate international convention so that her *whole* case could be considered and acted upon. In this opinion we were supported by the British and French experts, who saw clearly the danger of turning the Conference into a tribunal for the trial of one of the most important Allies. The Conference had been called to make peace with Germany, not to raise issues amongst the victors.

We held that the rights of Germany should be surrendered in the Peace Treaty to the Allies, leaving Japan or some other Power as temporary trustee until such time as a separate international convention of interested Powers could be convened to adjust the many complicated questions that go to make up the problem of China. We felt then, as we do now, that the higher interests of the Chinese people would have been greatly advanced by adhering to this program, but unfortunately these ideas failed to harmonize with the program of those determined upon "making an example of Japan." It is on record, however, that at the eleventh hour, Secretary Lansing attempted to snatch victory from defeat by proposing to the Council of Five that the plan outlined above be adopted. It was then too late. Mr. Balfour, who had signed the secret agreement with Japan on behalf of Great Britain, said "quite so" when Viscount Makino remarked that the Shantung question was outside the jurisdiction of the "Five" and in the hands of the Council of Three.

THE FAR EASTERN REVIEW has been consistent in its stand for a square deal for China on the Shantung question. Had our advice been followed at the beginning, all the subsequent trouble arising out of this question would have been avoided. Now, at this late date, when all other solutions have failed, we find the American advisers and defeated Chinese delegates vociferating to have the

Shantung question placed before the League of Nations, the Hague Tribunal, or a separate international convention. The Chinese and their advisers have returned to our starting point, clamoring for the very thing that we so strenuously advocated at the outset, and for which we have been condemned and persecuted by the inner circle that has dominated American relations with China during the last four years. THE FAR EASTERN REVIEW has the satisfaction of having been in the right, and of having lived up to its steadfast policy of securing real justice for China.

The troublemakers have had their day. The breach between Americans and Japanese has been perceptibly widened as a result of their activities following the Shantung decision at Paris. But the Shantung question has gone the way of all things in China—relegated to the classics. When it was seen that America had no intention to go to war with Japan over Shantung, China settled down to her old routine. It is a good time for Americans to stop and survey the situation. Let us look the facts in the face.

The facts presented in this Shantung number of THE FAR EASTERN REVIEW prove conclusively that there was no "discrimination against American traders at Tsingtau." There was no possibility for discrimination, because (as here testified) except the two American firms specified—the Standard Oil Company and the Katz concern—*there were no American traders on the job to suffer discrimination.*

\* \* \*

## The Shihchiachuang Railway

VISCOUNT Acheson, director of the British-American Tobacco Company (China), has just returned from a trip through that section of the famine area being traversed by the road from Shihchiachuang on the Peking-Hankow railway to Tsangchow on the Tientsin-Pukow railway, which is being built in aid of famine sufferers and towards the construction of which the British-American Tobacco Company made a generous donation of \$100,000.

The line is divided into two sections, a western and an eastern and for the time being work is being confined to the western section which consists of five divisions of 22 kilometres each. Work has been started 13 kilometres from Shihchiachuang and has been completed for about nine kilometres, the embankment being from six to eight feet high and 18 feet wide at the top. The point of junction with the Peking-Hankow railway has not yet been determined upon.

On the eastern section work has been temporarily suspended owing to the kilometres of the first division of the western section being 75 per cent. constructed, and work on each of the other divisions is under way. On the eastern section about eight kilometres have been 15 per cent. completed.

The engineering work is in capable hands and it is estimated that 1,500 men of each division, if working to full capacity, could complete the line in two months. The soil is very easy to work being composed of clay or clayey sand. The embankments are never more than ten feet high. Luckily the winter has not been very severe and it is doubtful whether the ground has ever been frozen to a greater depth than eight feet.

The arrangements made by the central authorities have, says Lord Acheson, been most efficient especially as regards organization and administration. The ground has been surveyed over a practically level surface for the whole length of some 220 kilometres. The necessary gaps have been left for culverts and crossings for country roads. Ample tools were available and the arrangements for food, salt, coal, etc., as well as sleeping quarters, were all that could be desired. More labor could be put on the job, however, and this will be arranged for from the concentration camps now that the weather is easing up and the frost is thawing out. Lord Acheson says that judging by the number and size of the towns through which the highway passes, the road should be self-supporting from the start.—*North-China Daily News.*

# Tsingtau's Water Supply

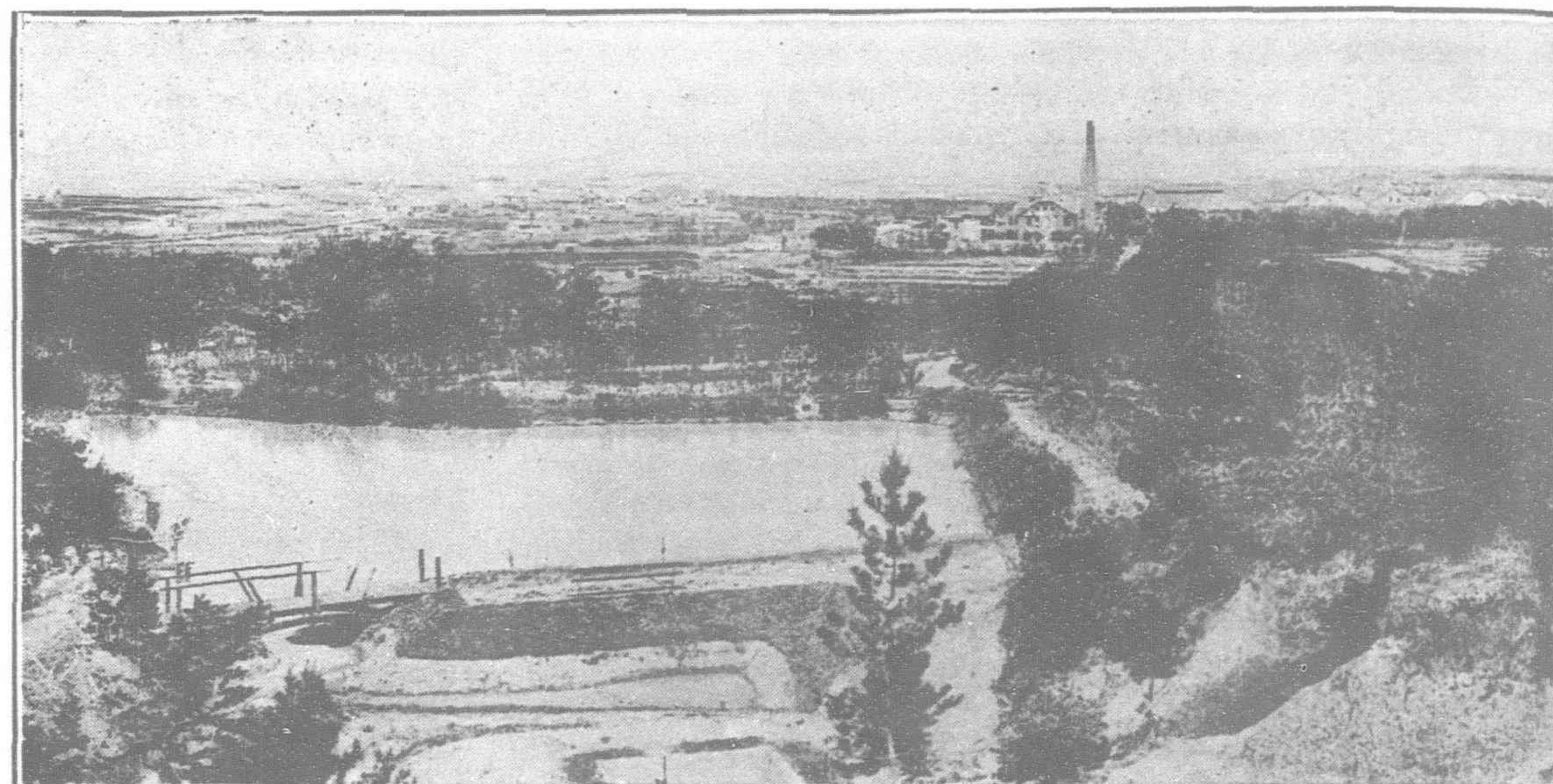
## A WATERWORKS IN A DRY RIVER

### The Litsun and Peishaho Pumping Plants

THE map of Shantung shows many rivers. On the popular Japanese maps of the province, these are colored a beautiful blue. Looking at these works of the lithographer's art, one gathers the impression that Shantung, like Japan, is blessed with an abundant rainfall with many deep, swift rivers running from the mountains to the sea. It is no wonder then that immediately following the Japanese occupation of the leased German territory, an enterprising Japanese in Tokyo, after one glance at the map, filed an application with the authorities for permission to operate a fleet of steamers on the rivers flowing into Kiaochau bay, or, that another energetic promotor requested the privilege of utilizing the waters of the Litsun and Peishaho rivers for a hydro-electric plant to furnish Tsingtau with current. They felt very sheepish and somewhat peeved, I am told, when, after building their castles in the air, they learned that the wide blue stretches on the popular maps were covered with water only after a rain, and then for a few inches and for a few days. At all other times, the Kiaochau rivers ran "dry." Rivers in eastern Shantung, adjacent to Tsingtau, are like the celebrated Manzanares in Spain. They can be navigated just as pleasantly and safely in a coach as on horseback. In other words, Shantung is a dry province.

The mean average rainfall in the Kiaochau district is 500 mm. as compared with 1,282 mm. at Hankow, 1,104 mm. at Nanking, 1,544 mm. at Tokyo and 1,373 mm. at Osaka. The rivers, with their limited watershed, rapidly discharge the surface rain fall

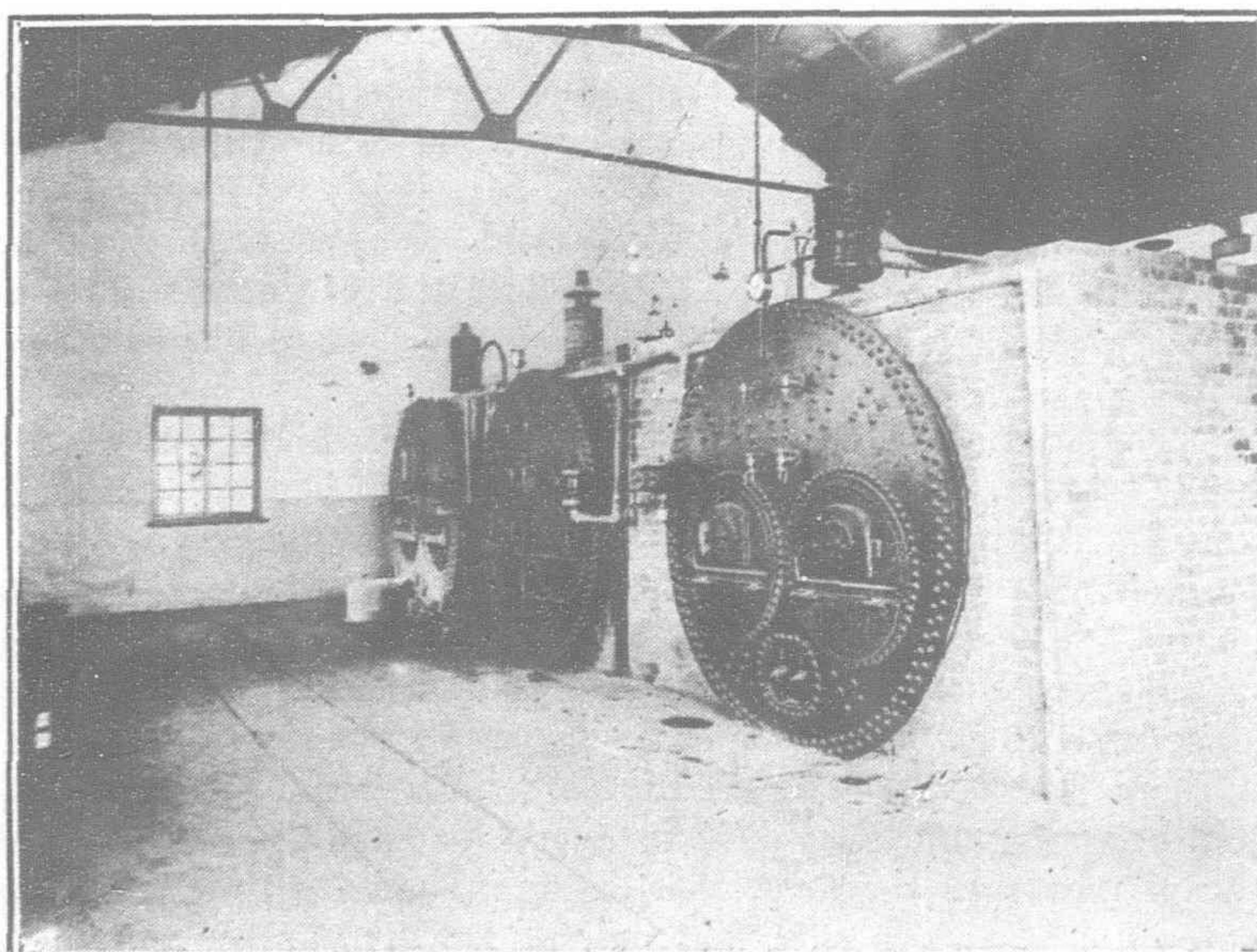
into the sea and resume their habitual Sahara-like appearance. When the Germans started to lay out their new city on the bay of Kiaochau, they sought on all sides for water, but for many miles around there were no surface indications of an abundant supply for a large city. So they sank wells within the city limits and nearby country, but after 160 trials, they gave it up and in 1906 erected a pumping station and small waterworks at the Hipa river which supplied 600 tons of water per day. The catchment



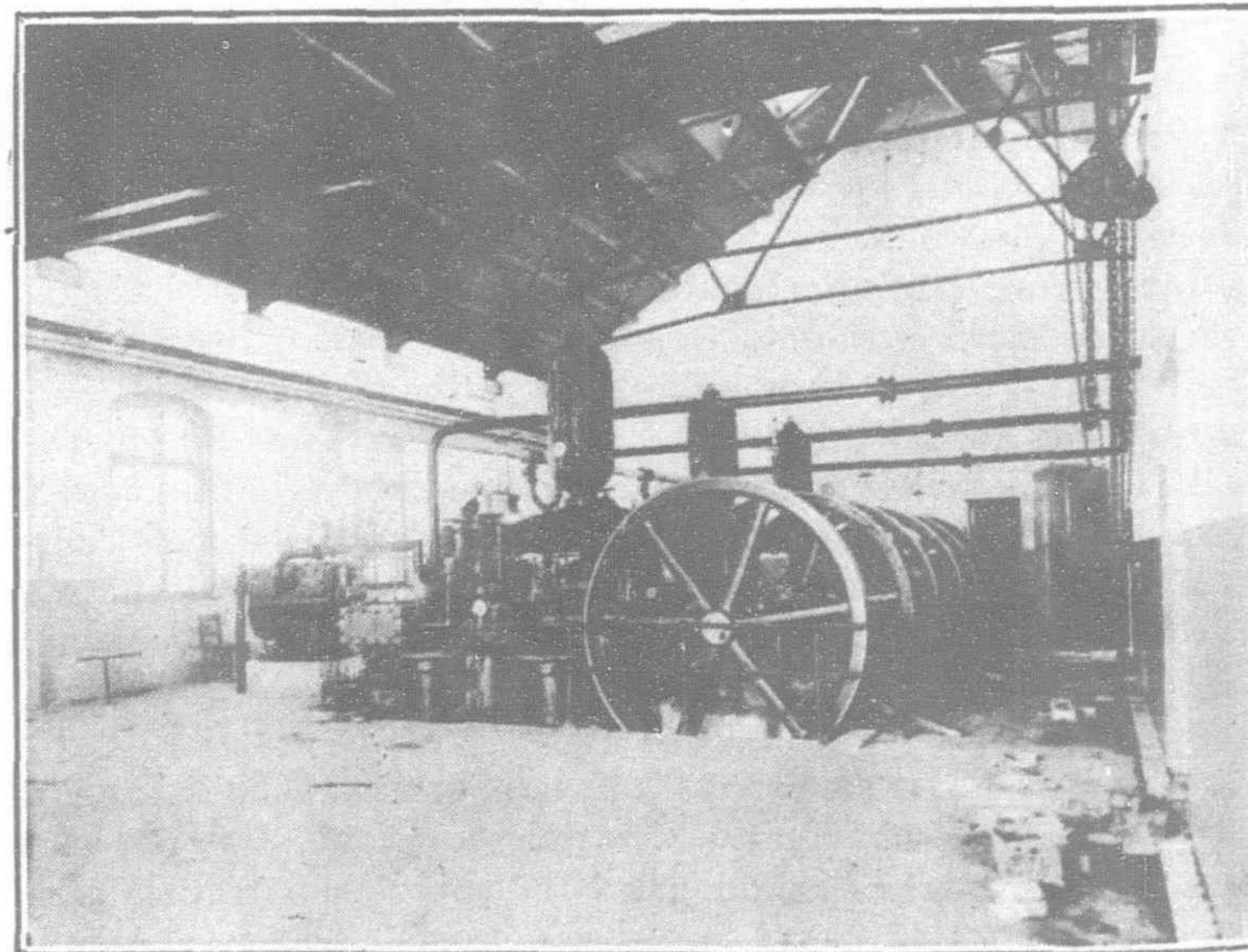
The Old Reservoir on Wakazura-yama, formerly Moltke Hill. Capacity, 2,000 Cubic Meters

area of this river covered only five square miles, wholly inadequate to supply the demand of the growing port. Some other method had to be found to procure water.

Experiments and test wells showed that under the dry bed of the Litsun river an abundant supply of water existed at an average depth of 14 feet. The highest water level registered in the gravel bed is about 9 feet under the surface, the lowest level registered



The Boiler House at the Peisha Pumping Plant



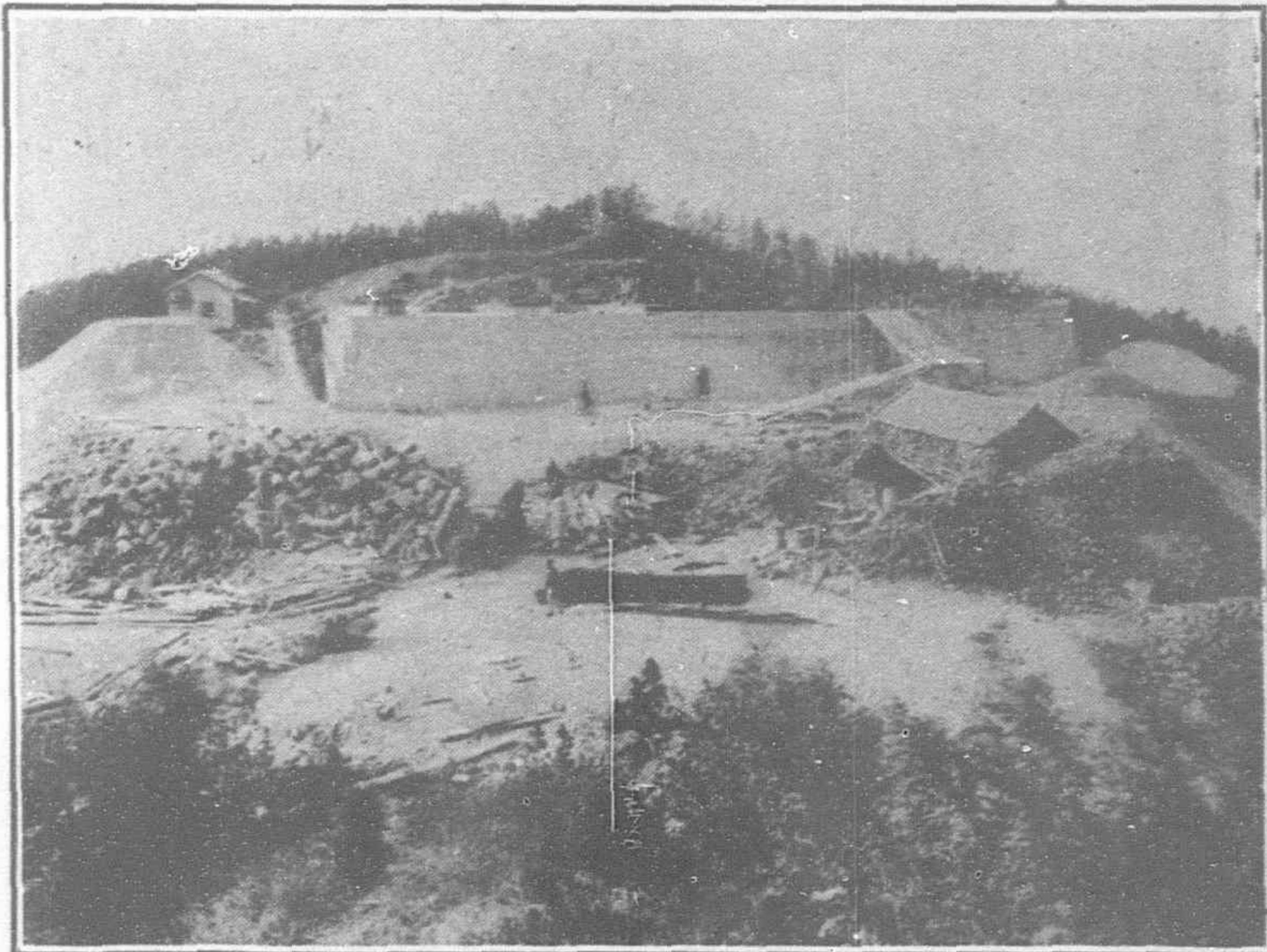
The Pump Room at the Peisha Pumping Plant

to date, is about 19 feet, leaving about 20 feet of water in the basin at the dryest periods. The borings on the bank showed a top layer of clay ten feet in depth, then 30 feet of sand and gravel down to bed rock. Here the Germans decided to establish their water station and pumping works, seven miles from the port. The plant was completed in 1909. The system adopted was most

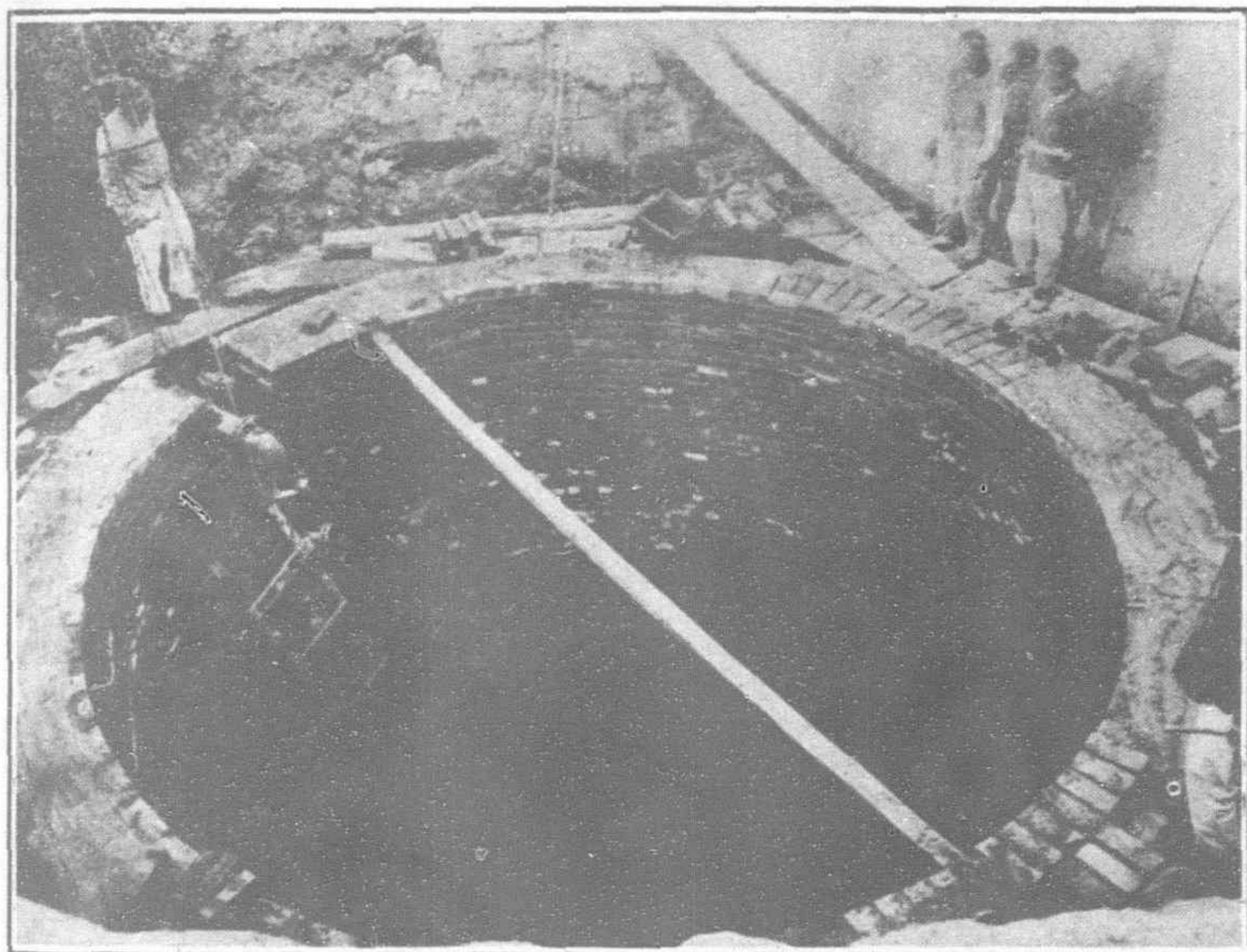
ingenious, and the plant is perhaps the only one of its kind in Asia. A chain of thirteen wells were bored, and six inch heavily tinned copper pipes sunk in the cavity before withdrawing the protecting outer iron casing. Near the lower extremity, for a length of ten feet, the copper pipe was perforated to permit the entrance of the water from the gravel bed. These pipes are all 40 feet in length,



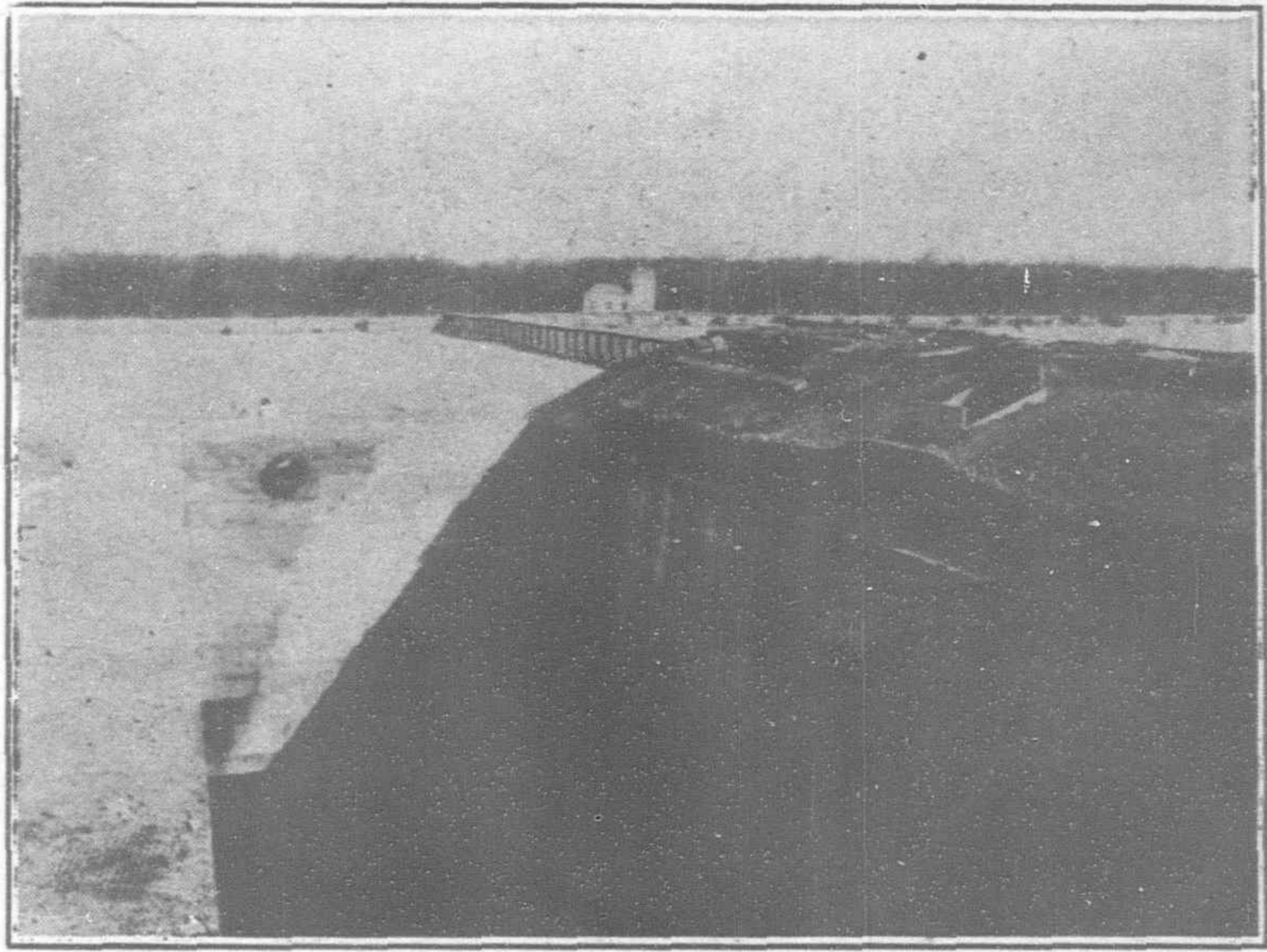
Top of New Reservoir on Wakazura-yama, 1921. Capacity, 4,000 Cubic Meters



New Reservoir on Wakazura-yama, 1921



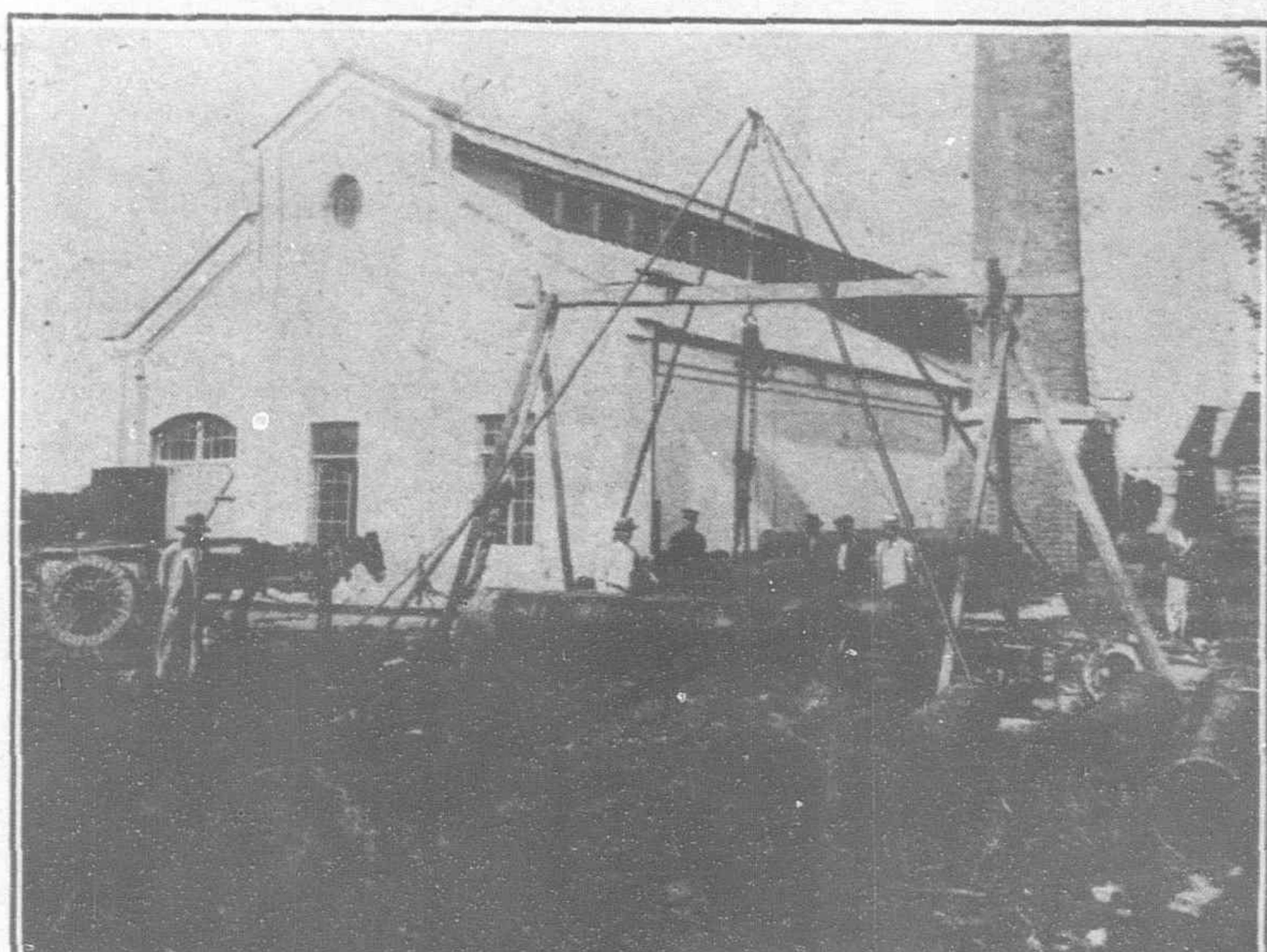
Collecting Well at Peisha Pumping Station, 1920




Sub-Reservoir at Litsun Pumping Station 1920, capacity, 380 Cubic Meters



Laying Pipe Line from Peisha to Litsun Stations




Water Test of Cast Iron Pipe at Litsun Station



# MAP OF THE TSINGTAU WATER SYSTEM

reaching down to bedrock. The upper ends are capped, and all connected together with a pipe leading to a vacuum pump in the pumping station, which keeps a constant flow of water from the wells into the underground collecting tank by the siphon system.

The Litsun river collects the water from an area of 40 square miles, and the plant installed on the above principle provided about 1,800 tons of water per day, which met the requirements of the city up to the time of the Japanese occupation. When the Japanese forces approached the city, the Germans withdrew from the waterworks, destroying the pumps and machinery. In doing so, they cut off their supply of water and were compelled to rely on the filled reservoirs and local wells. The Japanese engineers confess that when they examined the Litsun pumping plant, they were puzzled to understand where the water came from. They found the tops of thirteen pipes sticking up three feet above the ground in the woods on the opposite banks of the river 1,200 feet from the collecting well, but could find no connection. It was not until a German prisoner explained operation of the system that they understood, and by the time the city was surrendered, they were well along with the restoration of the plant. Two of the old German Lancashire boilers were repaired. The three pumps were hopelessly ruined, so a new set was ordered at once from the Osaka Iron Works. The plant at present is equipped with three double-acting, cross-compound, condensing fly wheel pumping engines, with



Litsun Pumping Station Showing Location and Connections of Wells

P. Pump House with 3 Steam Pumps (capacity 125 cubic meters/h. each) and 3 Electric Pumps (capacity 500 cubic meters/h. each)  
 C.W. Collecting Well (dia. 3 meters, 9.40 meters depth)  
 A.B.C.D. Pipe Wells for Condenser use  
 1 to 14@ Pipe Wells for Drink Water } Pipe dia. 6", 40-ft. long  
 1 to 340 Surveying Pipes of Water Line under ground  
 1 to V. and 1 to 80 in delta Pipe Walls } Dimension the same as above.  
 1 to 10@ in Δ Surveying Pipes

a capacity of 125 cubic meters per hour each. Two of the old German boilers are in service, while a new one has been furnished by the Sakaigawa Iron Works of Osaka. The water is pumped from the collecting tank through a 16 inch pipe line, seven miles to the reservoirs on the summit of Moltke Hill, renamed by the Japanese, Wakazuru-yama. The original German reservoir at this place had a capacity of 2,000 tons. This has been enlarged by the Japanese by the addition of another reservoir alongside the old one, with a capacity of 4,000 tons. A third one is now being planned. There is also a small reservoir on Observatory Hill.

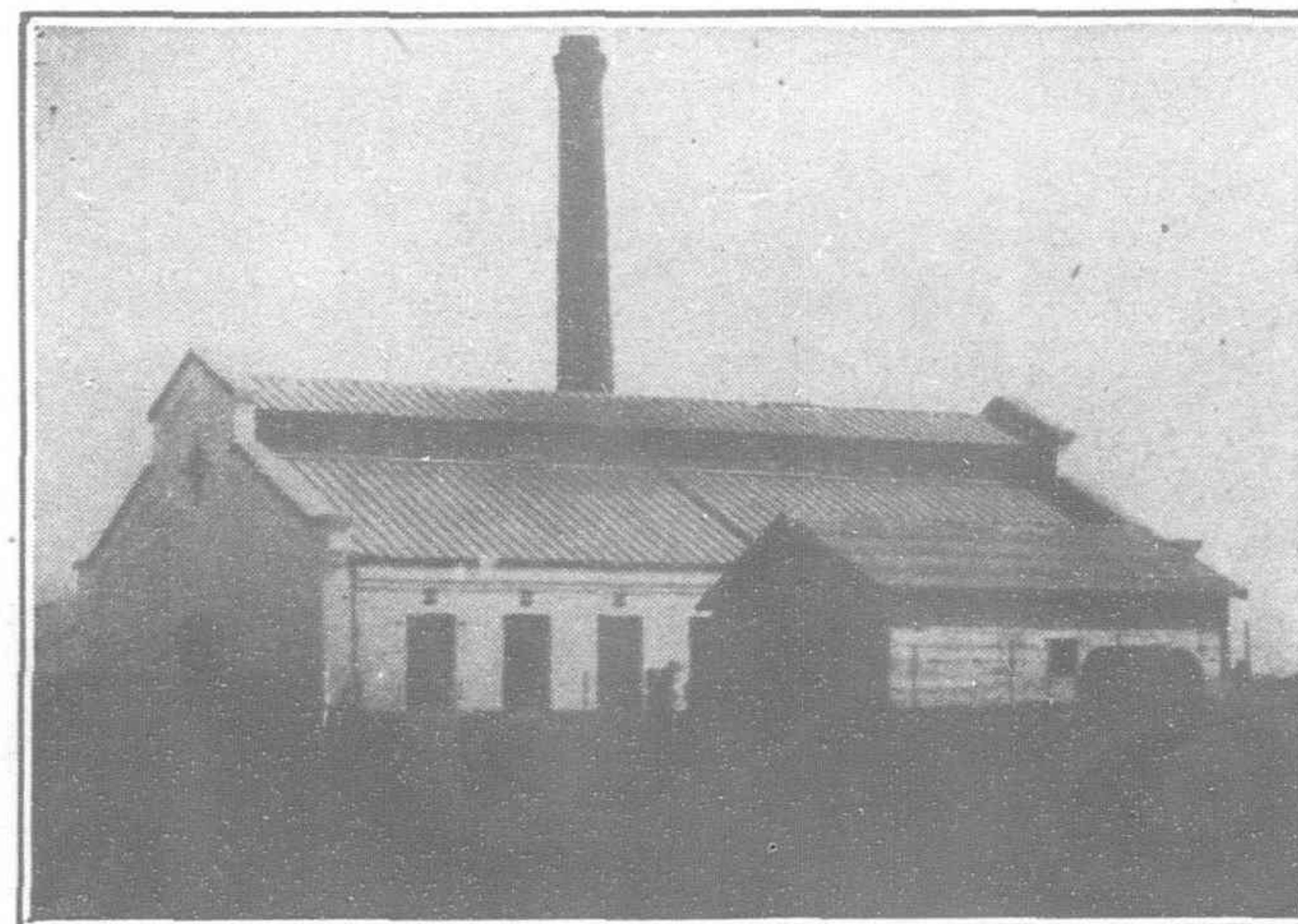
The Japanese have enlarged the supply of the Litsun station, by driving 15 new wells in another part of the river, employing the same system, and have expanded its pumping capacity by the addition

diameter and 28-ft. 4-in. long from the Sakaigawa Iron Works. The fifteen wells can supply 8,000 tons of water per day. A 16-inch pipe line discharges into the Moltke Hill reservoir, 14 miles away. An additional 16 inch pipe line is now being laid from the Litsun station to the reservoir. The cast iron pipe is made in Osaka. A new road 7 miles in length has been built connecting the Litsun and Peishaho pumping stations, following the pipe line. All depressions and river beds along the road have been paved with heavy stone blocks.

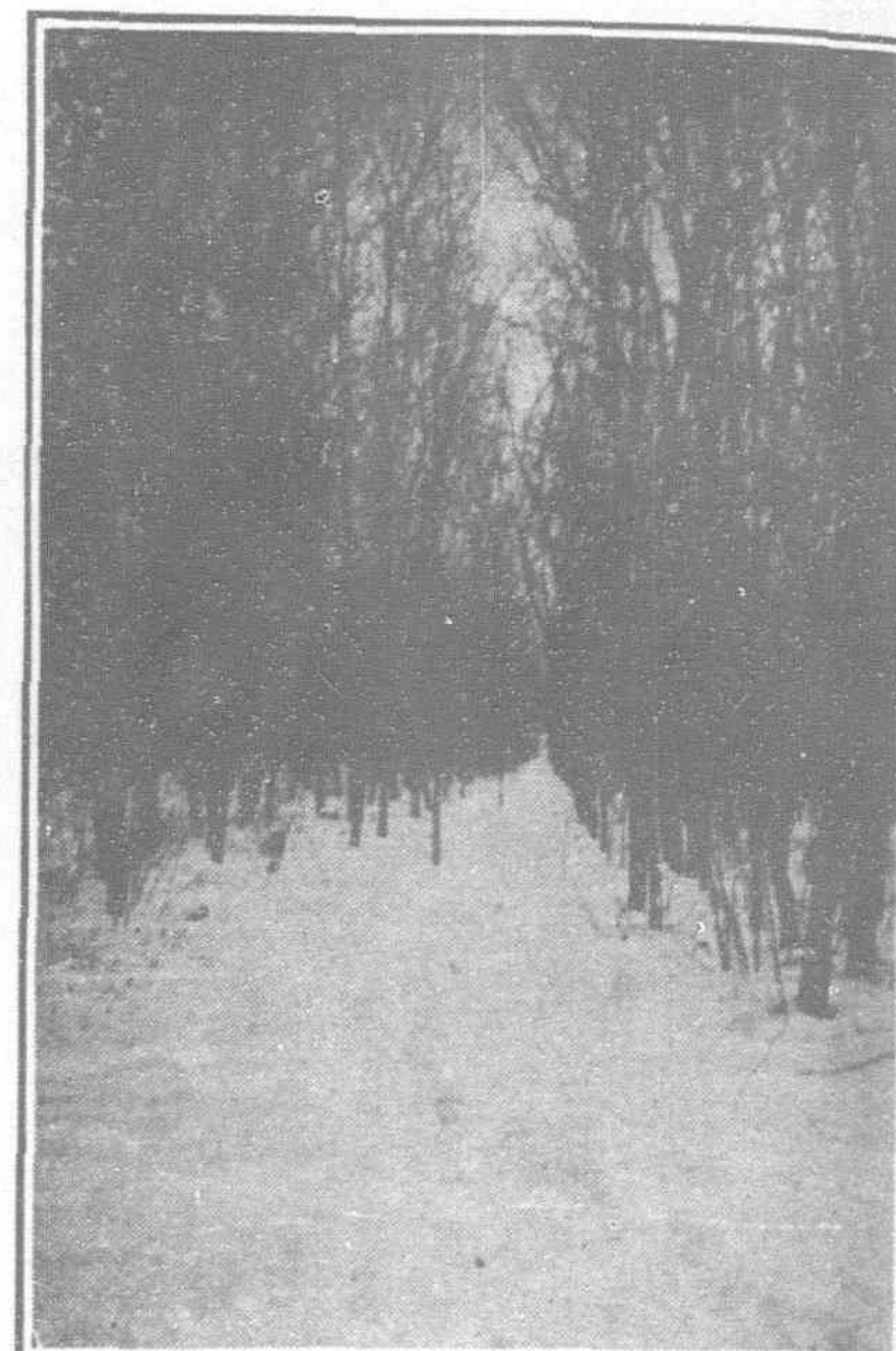
At the Litsun station a forest covering an area of 120,000 sq. yards has been planted where the wells have been sunk to protect the well area from contamination. Alongside each well pipe, is a smaller test tube which reaches down to bed rock, and at regular intervals



Well Pipes Sunk in Forest at Litsun Station



The Litsun Pump House



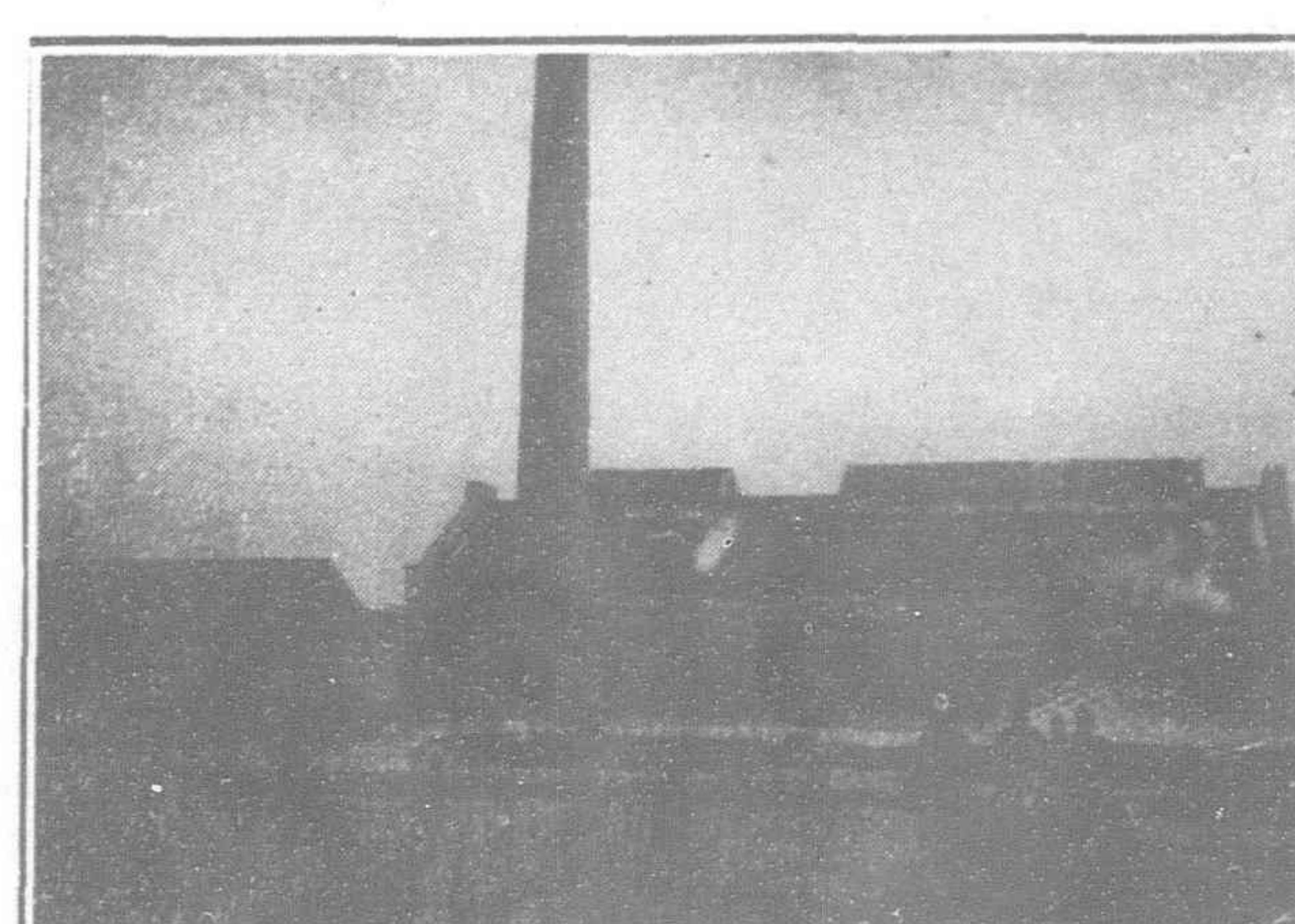
Row of Test Pipes to Determine Depth of Water in Collecting Field at Litsun

a capacity of 500 cubic meters per hour or delivering 150 cubic feet per minute at 1,440 r.p.m. The motors are 150 horse-power operated by current supplied from the municipal plant at Tsingtau. These motors and turbines were furnished by the Kansai Kosaku-sho, of Kobe, Japan, and make a highly presentable appearance. This plant is not yet in operation, but is expected to be placed in service shortly, when the old steam plant will be held as a reserve.

With the growth of the city, the Japanese engineers have been compelled to go further afield in their search for water, and selected the next large river called Peishaho, fourteen miles from Tsingtau, as the site for a new pumping station. The catchment area of this river covers 80 square miles, and at a suitable point near the mouth, a new station, built on the same lines as the one at Litsun river, drawing water from fifteen wells was completed in January, 1920. The equipment is identical with the Litsun steam plant, but with some improvements in the machinery, which consists of three horizontal double-acting, plunger pumps with water cylinder of 220 mm. diameter with a capacity of 125 cu m. per hour with horizontal cross compound condensing engines, cylinders 280 x 440 mm. and 500 mm. stroke, 60 r.p.m., furnished by the Osaka Iron Works in 1920. There are three Lancashire boilers, 7 feet in

soundings are made to register the depth of water. At the office of the water department in Tsingtau is installed a Barr & Lennox electric water level indicator, which records for every hour the amount of water used and the level in the reservoir. This interesting and indispensable instrument is made by Glenfield & Kennedy, Ltd., of Kilmarnock. The pumping plant at Peishaho is also equipped with its own electric lighting set made by the Osaka Electric Works. The total length of water mains in Tsingtau before November 1914, was 87,632 meters, to which the Japanese have added 36,301 meters up to September 1920. Over \$1,000,000 gold has been expended by the Japanese authorities in rebuilding and improving the water supply since they took over control of the city.

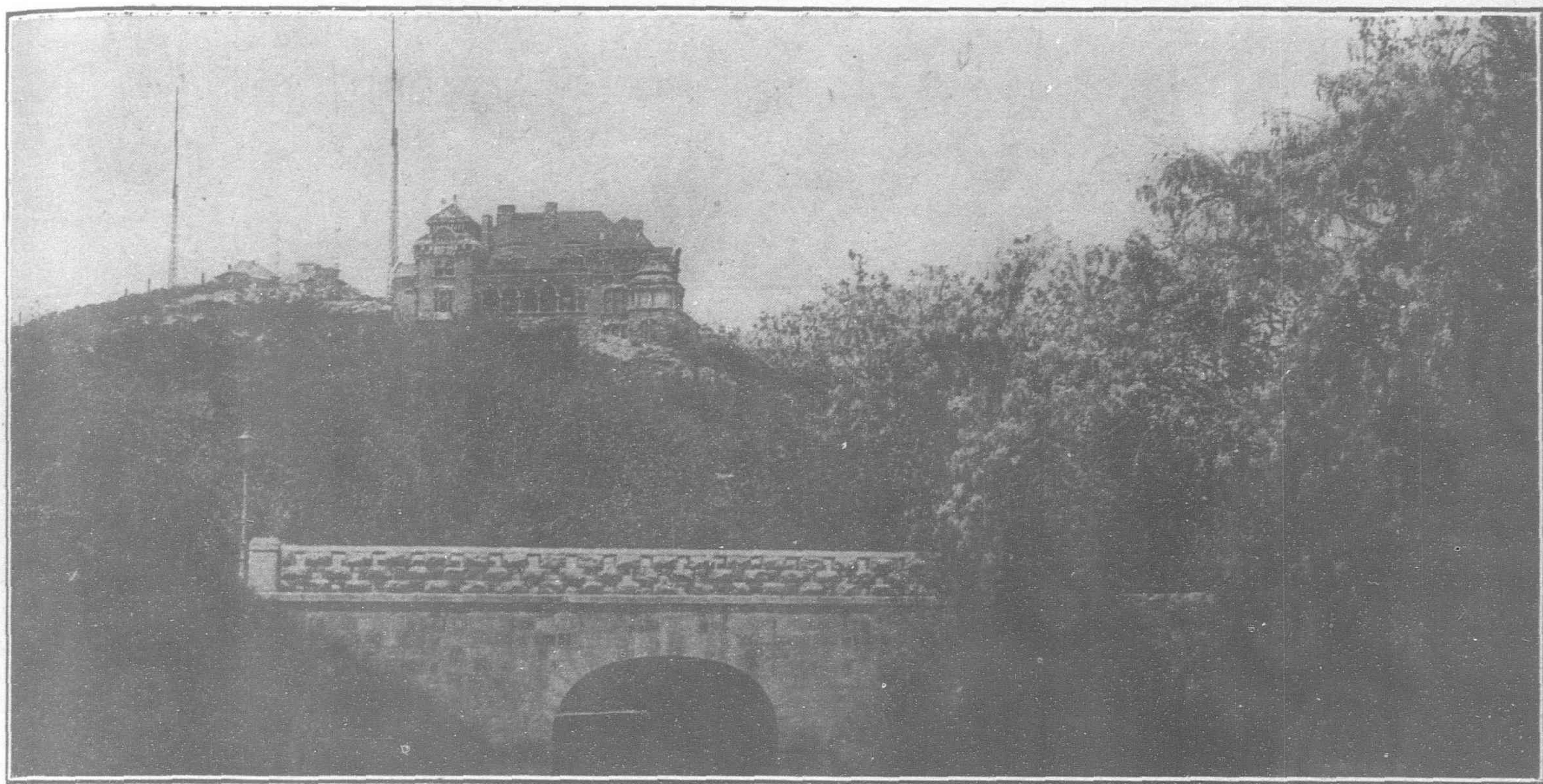
The success of this most interesting engineering undertaking is due largely to the supervision of Mr. J. Oni, the engineer and director of the waterworks department of the civil government. He assumed charge at the time the Germans abandoned and destroyed the Litsun plant, and within two months had it repaired sufficiently to supply the city with water. Since then he has been in charge of this department and carried to successful termination the extensions and improvements. The Tsingtau waterworks are undoubtedly the most interesting and unique feature of the public utilities in the port and perhaps of the entire Far East.



The Peishaho Pump House

# The Phenomenal Growth of Tsingtau

A Monument to Honest Administration and Efficiency, Commenced by Germany and Completed by Japan



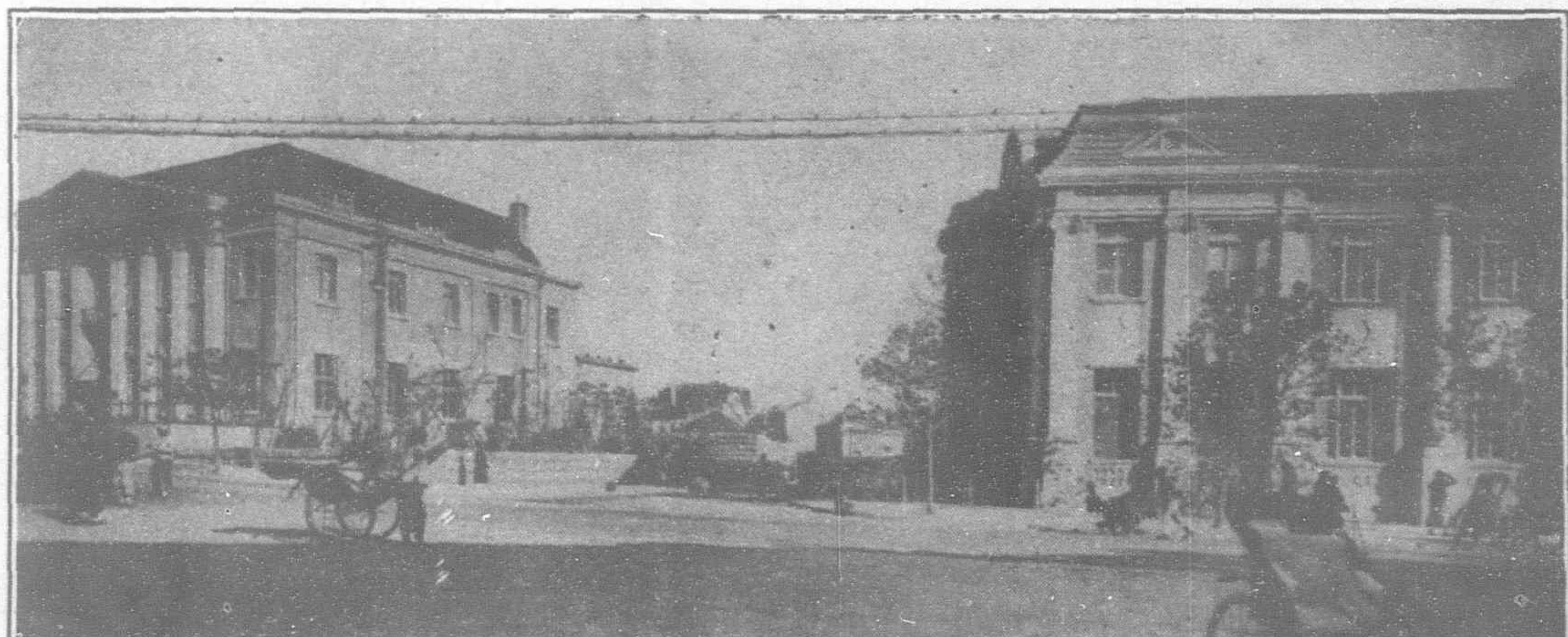
The Governor's House, Tsingtau

**T**SINGTAU stands as a monument to German creative energy and executive direction which transformed in sixteen years the mud hovel fishing village on the shores of Kiaochou Bay, into the most beautiful spot on the coasts of Eastern Asia. No matter how much we may criticize and condemn the political methods which led to the acquisition of the Leased Territory, the worst enemy of Germany must bear willing testimony to the organizing genius which finds expression in the beautiful parks and wooded hill sides, magnificent buildings, wide, clean streets and roads, and the public utilities which sets Tsingtau far above the other ports on the China coast.

Japan took over the work of Germany in November, 1914. Since then she has been subjected to a storm of criticism for every step taken in Shantung. But she has also built an everlasting monument by carrying forward the great work inherited from Germany. While Germany was chiefly concerned in establishing a fortified naval and military base for further territorial expansion in China, Japan has concentrated her energies in creating productive industries and developing sources of new wealth. The German forts have been destroyed, the barracks have been converted into schools. The naval base has been dismantled; the "little piece of Germany in the Far East" has been further beautified and expanded. Broad, finely surfaced and shaded roads and streets with ample side walks, rows upon rows of brick and stone foreign style

residences and business blocks, numerous factories in a new district near the harbor, and other improvements proclaim that Japanese creative energy is on a par with, if not superior to, the much vaunted efficiency of Germany. Cavid and carp as we may about Japanese methods, no openminded critic after investigating the work of Japan in Tsingtau, can honestly withhold due praise and credit for the wonderful development that has taken place under six years of Japanese administration.

The development of the city has been carried out along well conceived plans. Extensive street construction and building operations have completely changed the appearance of large sections. Over \$15,000,000 (gold) has been expended upon public improvements, all met by revenues derived from municipal taxes and rents, receipts from electric light, water, post and telegraph charges, in



The Fine New Buildings of the Yokohama Specie Bank (on the left, and the Mitsui Bussan Kaisha (on the right) erected in the new Business District of Tsingtau

## VIEWS OF TSINGTAU



Huge German Barracks at Tsingtau, Converted into a School House by the Japanese Military Authorities. The Middle School, formerly the Iltis Barracks

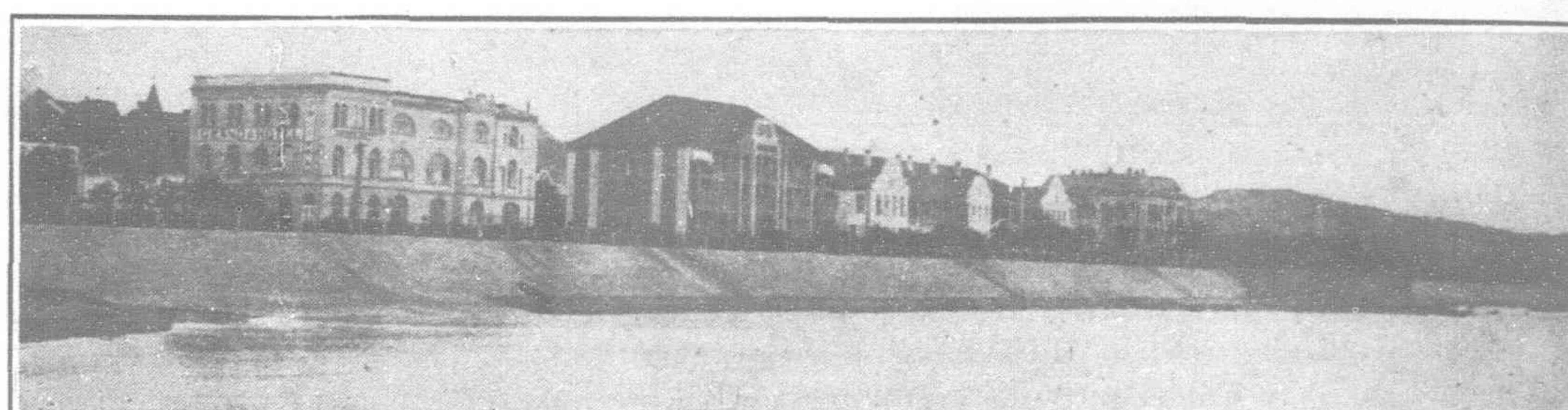
addition to the profits from the railway and its subsidiary enterprises. Tsingtau stands as an example of what can be accomplished in a few years in China under honest and efficient administration, where taxes are expended for the public benefit instead of filling the capacious pockets of grafting officials.

The total length of streets and roads within the municipal limits has been doubled, while the area covered by buildings has been trebled. The population which stood at 60,484 in July 1913, is now over 108,000, almost double. Japanese to the number of 20,709 have come into the city. One hundred and fifty Japanese concerns have opened branch offices in Tsingtau and fifty-five factories have been erected and placed in operation. Over \$60,000,000 (gold) of private capital has been invested, outside of the purchases of German business and residential property by the Military authorities. This is estimated at nearly \$1,000,000 (gold). A great reclamation scheme which calls for filling in about 30,000,000 cubic feet of tidal area near the great harbor, is well along towards completion at a cost of \$350,000 gold, and the new land will be used for warehouse, storage and factory purposes. A new factory district was laid out, streets cut through and sewer and water pipes laid within two years. At the other end of the city, in the neighborhood of the beach, another residential section has been planned, new streets will be

cut through, and other improvements carried out to make the district a highclass summer resort.

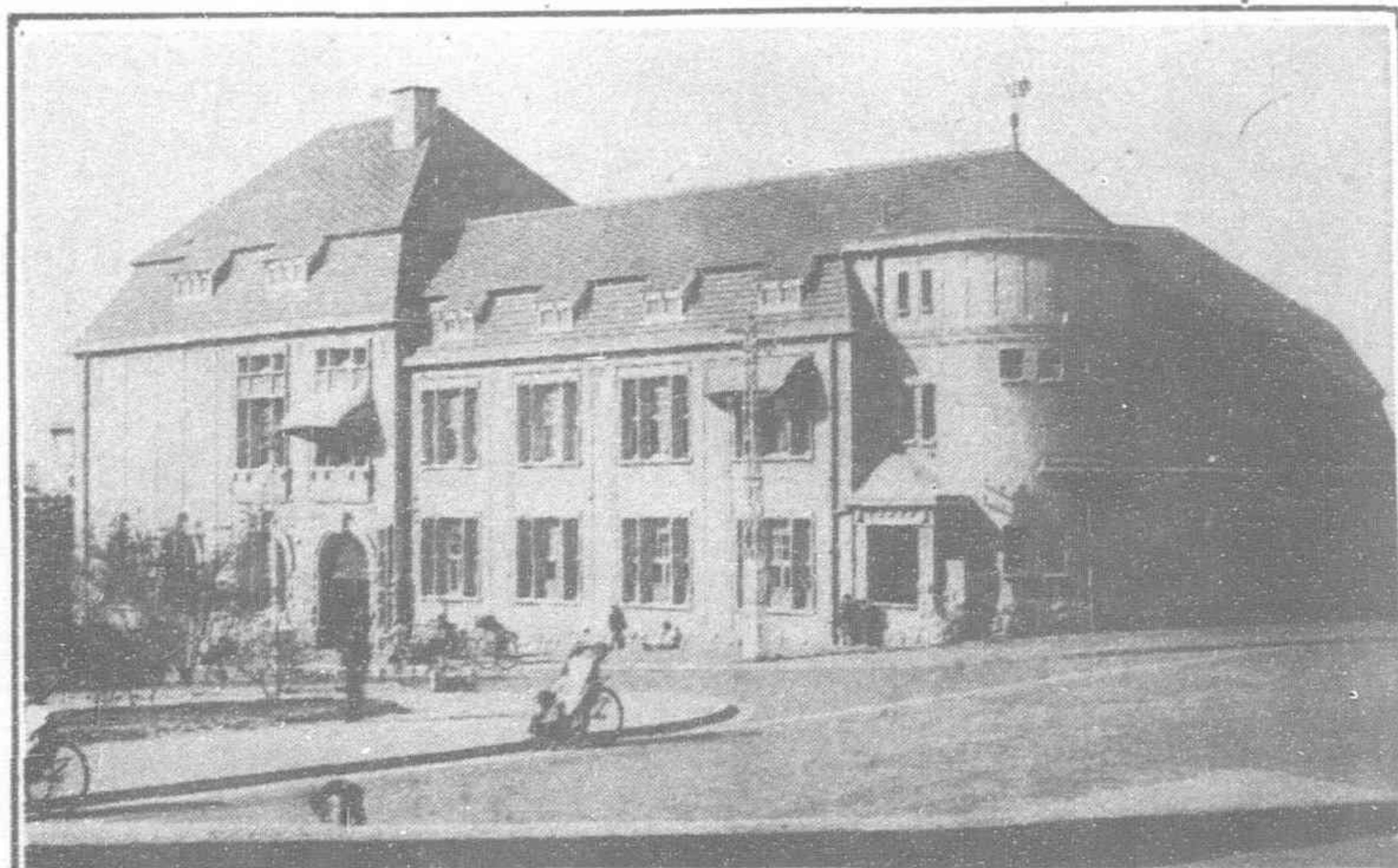
## Public Works

The laying out and building of new streets has been carried on with great energy. The area of the city under German rule was about 2,400,000 square yards. The Japanese have added 1,040,000

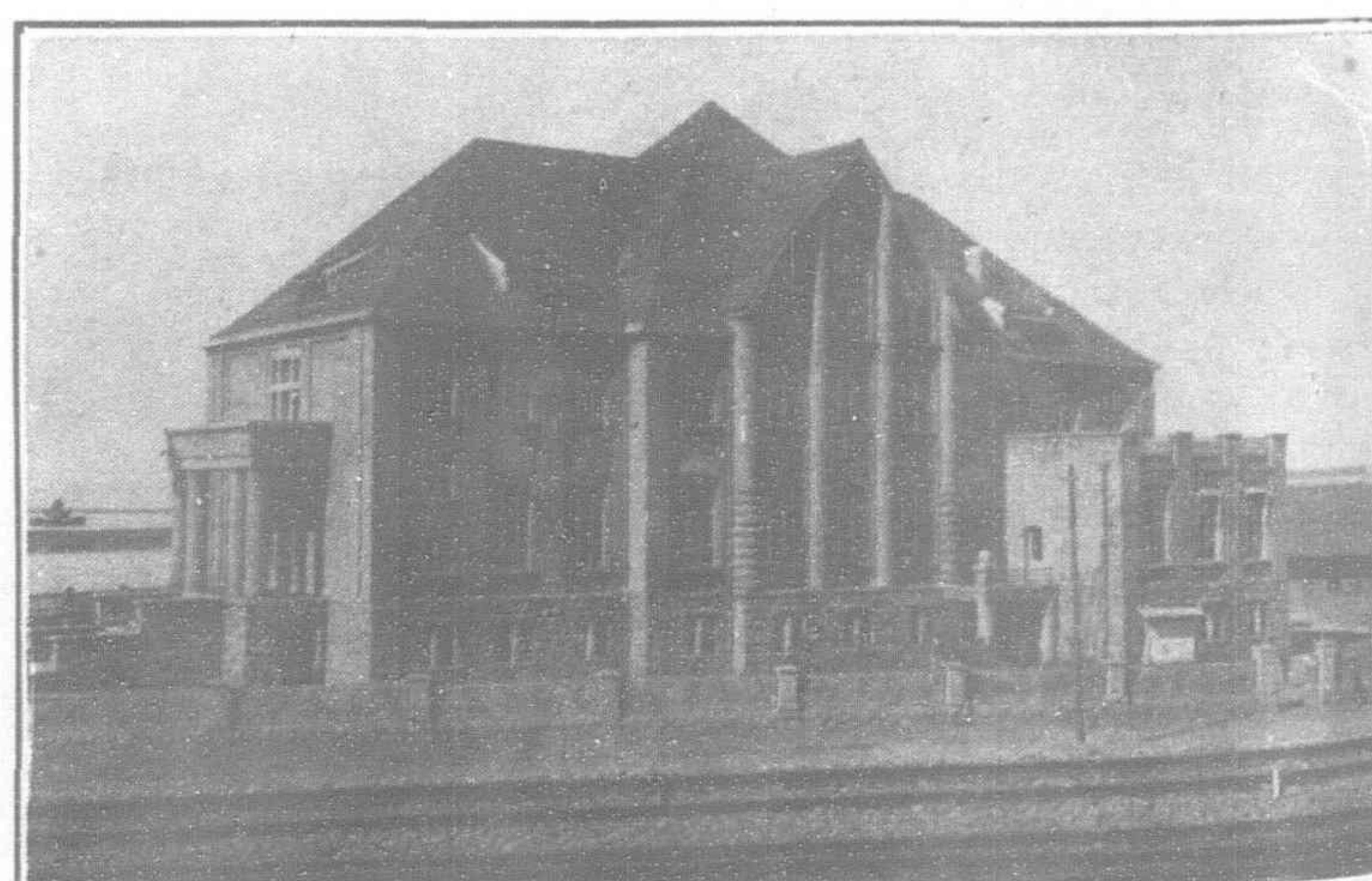


A Fine Piece of Foreshore Stone Bunding, Carried out by the Japanese Engineer's Office at Tsingtau

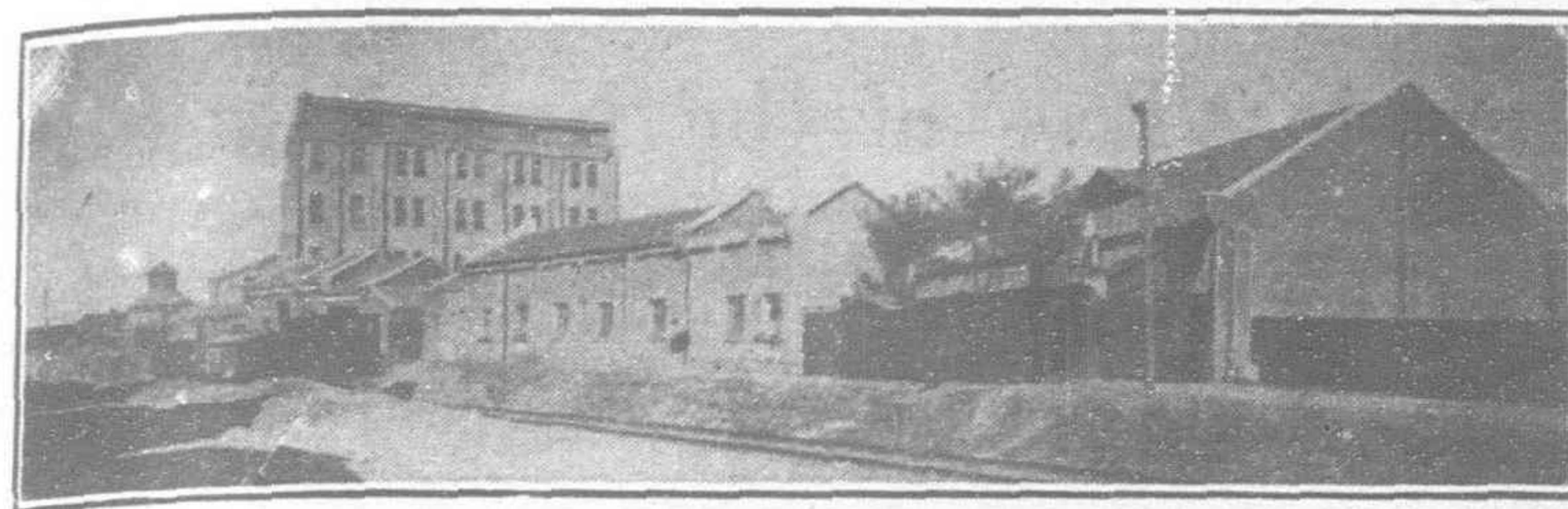
square yards completed with streets and buildings, and have under construction and improvement, an additional 4,000,000,000 square yards. The 1919 building statistics show a total area covered by buildings of 234,628 square yards owned by Japanese, 100,736 by Chinese, and 8,068 by Europeans and Americans. The capital invested in buildings is placed at Gold Yen 8,383,355.



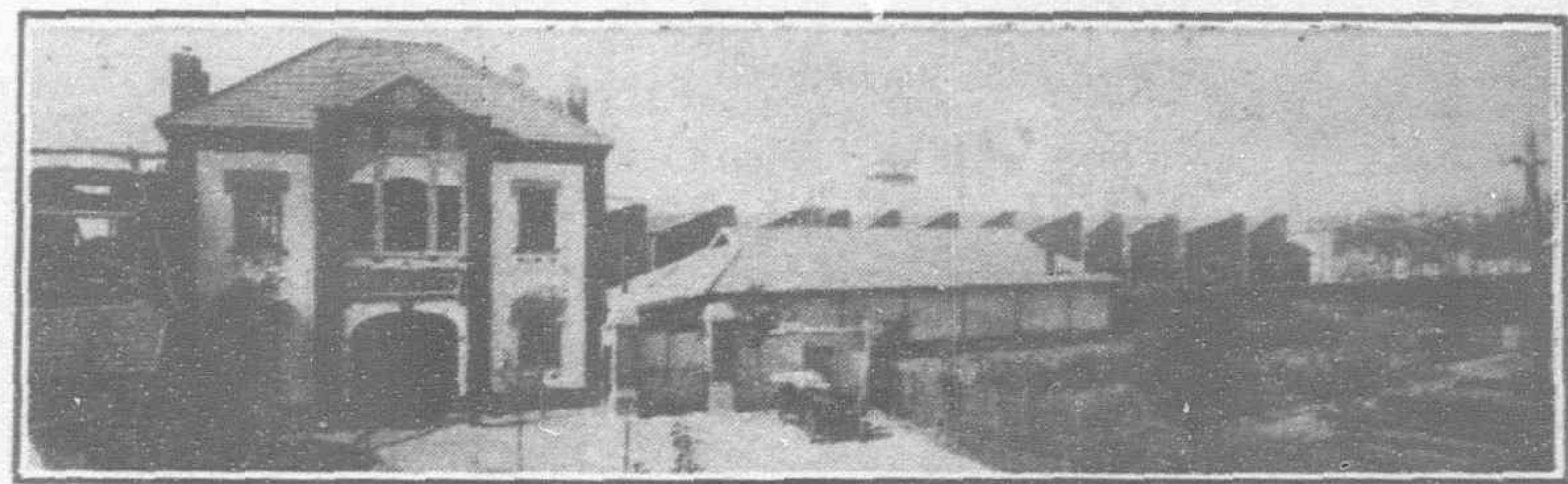
Tsingtau Civil Administration Office



The Custom House, Tsingtau



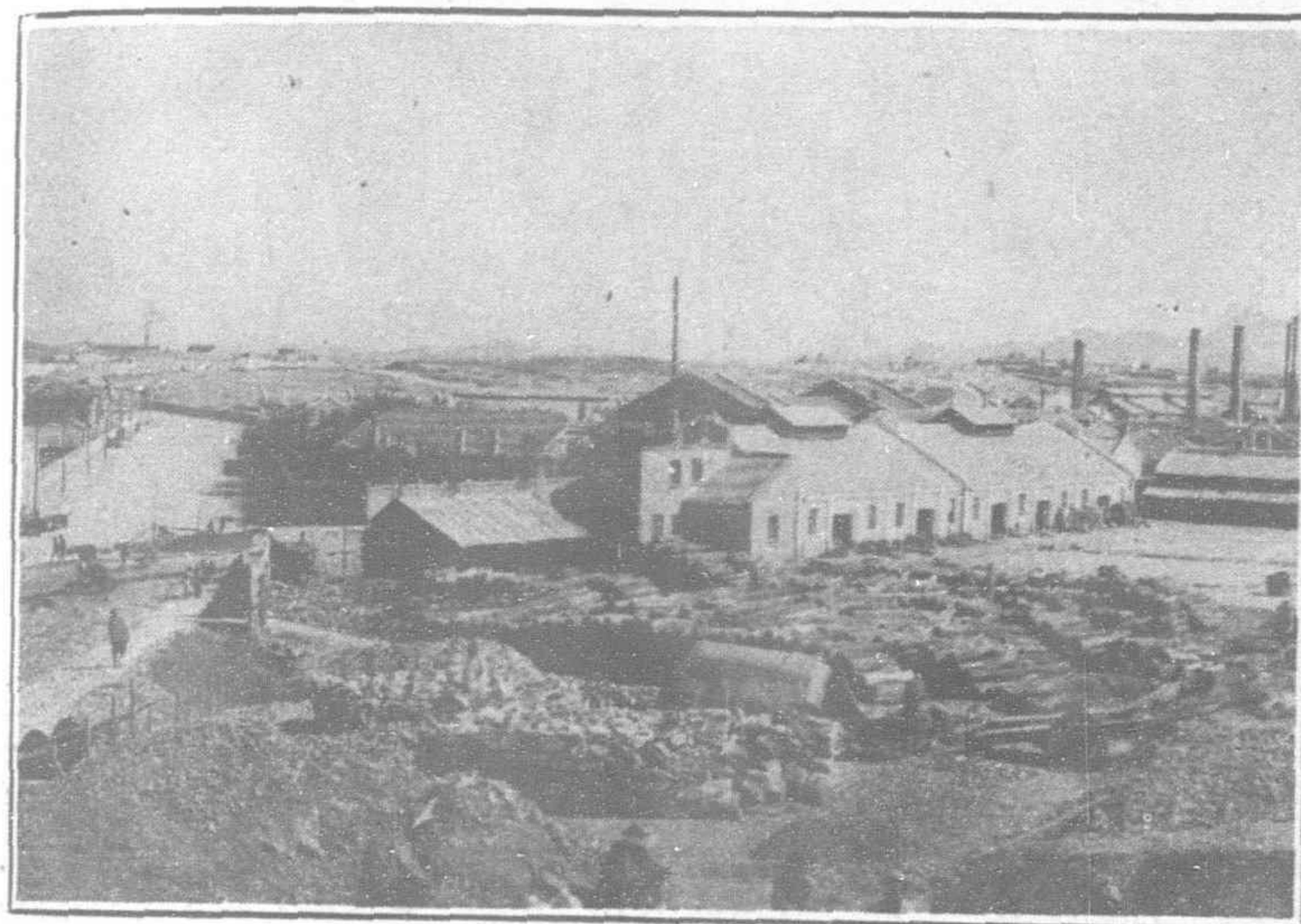
The Tsingtau Flour Mill



New Cotton Mill at Syfang

### Roads and Streets

Within the municipal limits the Germans laid 65,300 meters of macadam and 3,400 meters of asphalt roads. The Japanese have added 27,290 meters of macadam and 13,300 meters of asphalt streets. Outside the city in the Leased Territory, the Japanese have added 17,390 meters to the 27,290 meters of macadam roads completed by the Germans.

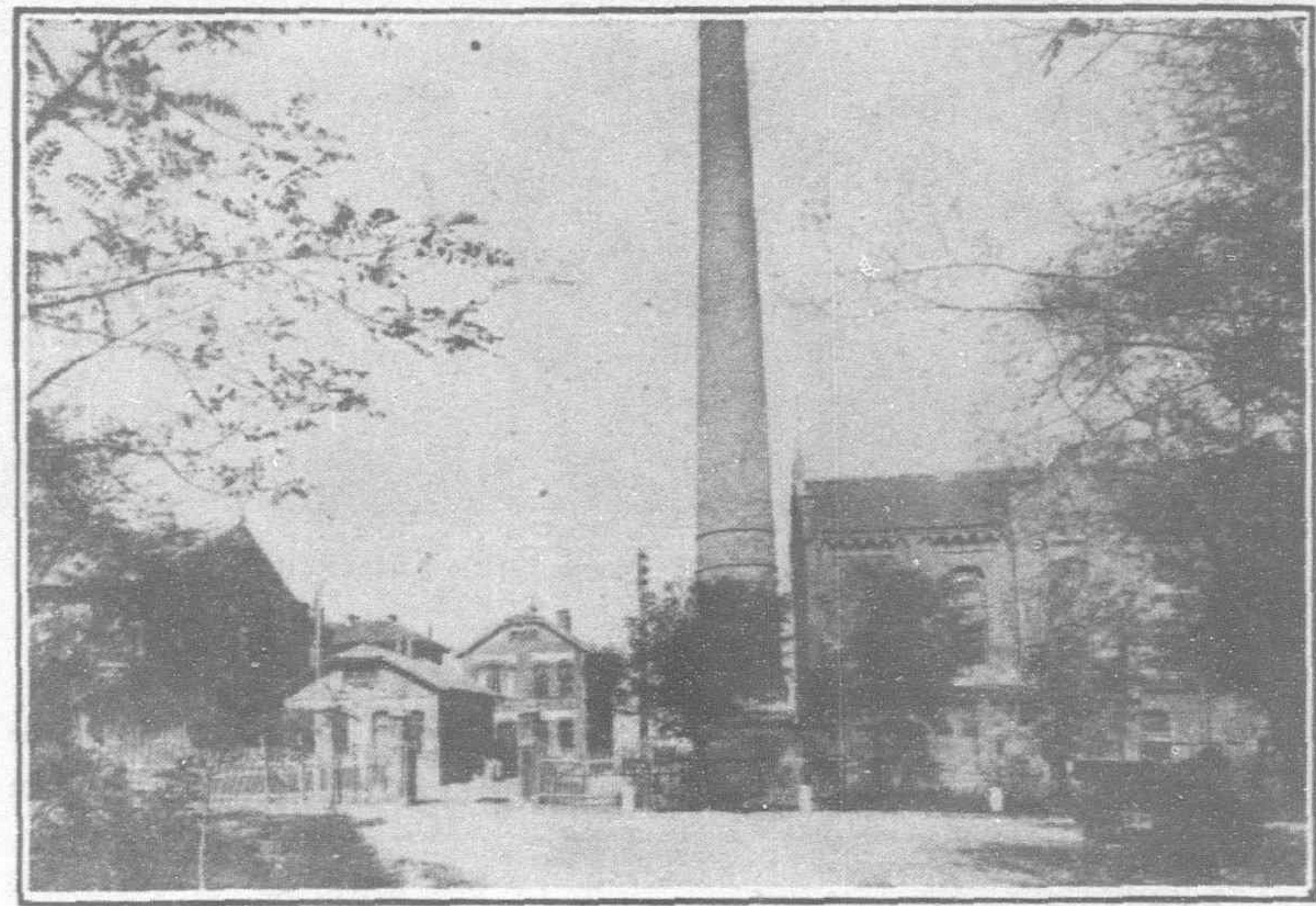


Taitoichin Factory District

the establishment of schools for the education of the Chinese.

A few months after the occupation of the territory, the primary schools for Chinese established by the Germans a few years before were re-opened with re-modelled curriculums.

The number of these schools, originally 26, has been increased to 37, with a total attendance of 3,000 children, which is more than double the figure in German days.



Tsingtau Brewery

### Sewage and Drainage

The city is divided into four gravity drainage districts each with a central collecting well and pumping station. From these district stations the drainage and sewage is pumped to a central collecting well, from where it is again pumped through a long pipe line discharging well out in the bay. The Germans laid 79,740 meters of drain and sewer pipes, to which the Japanese have added 57,760 meters. Vitrified clay pipe is now being made near Tsingtau and is extensively used in the public improvements.

Although the purpose of these articles is to emphasize the industrial and purely engineering features of the development of the Leased Territory and Shantung under Japanese direction, no resumé of what they have done would be complete without some reference to the equally important advances in promoting the welfare of the Chinese and foreign community in other directions.

### Education

The temporary Japanese government has provided an object lesson to the Chinese in

A new feature of the educational system for Chinese initiated under Japanese rule is the admission of girls who were formerly excluded. Their percentage is gradually increasing.

The primary course extends over five years, and the textbooks are selected from those used in the Chinese public schools in other parts of the country. The teachers at these schools are all Chinese except a few Japanese in charge of classes in the Japanese language.

At the public school at Litsun a normal school course is provided to train native teachers.

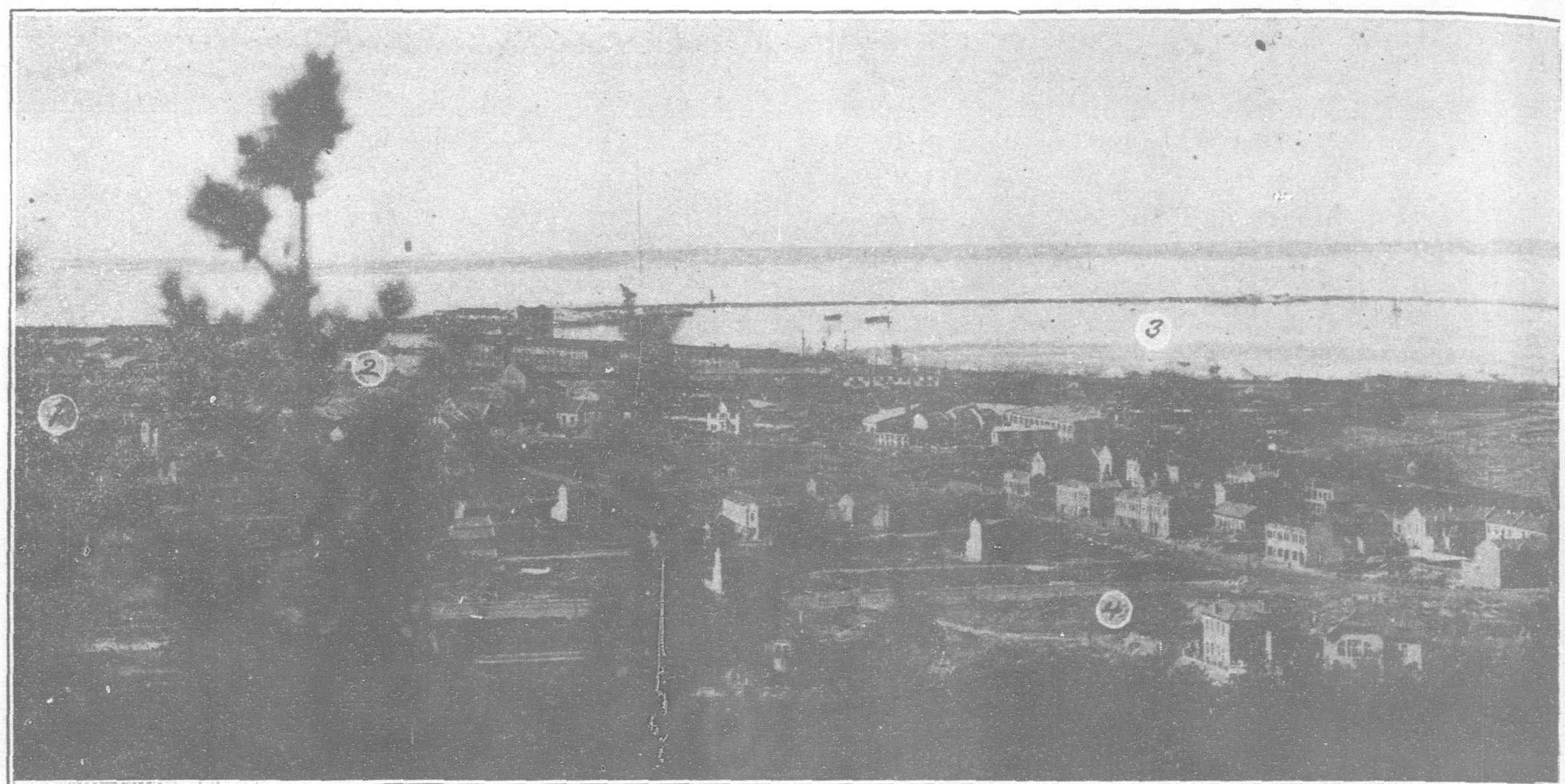
The railway training school under the Shantung railway administration gives an excellent practical education to about 100 students, about sixty per cent. of whom are Chinese. The Chinese graduates make a notably good showing especially in the mechanical and telegraphy departments. So many Chinese youths apply for admission that a large number have to be turned away every year.

It is worthy of notice that since last year the doors of the Japanese middle school



The New Market at Tsingtau

## Panoramic Views of the New Industrial

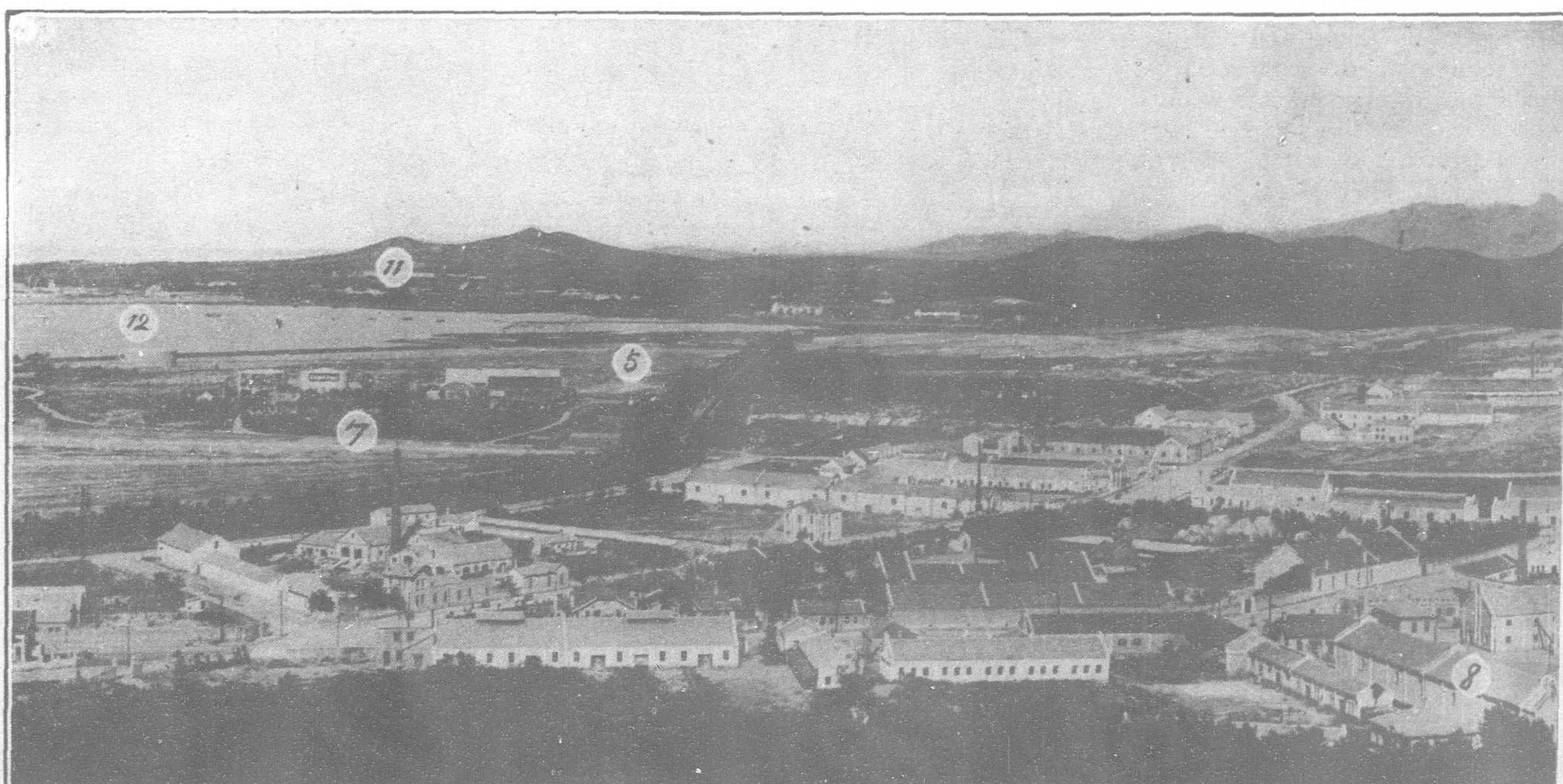


(1) End of the Old Town. (2) Entrance to the Great Harbor. (3) The Great Harbor. (4) Portion of New Town

in Tsingtao have been kept open for Chinese boys. This privilege has been taken advantage of by several promising boys from the interior of the province.

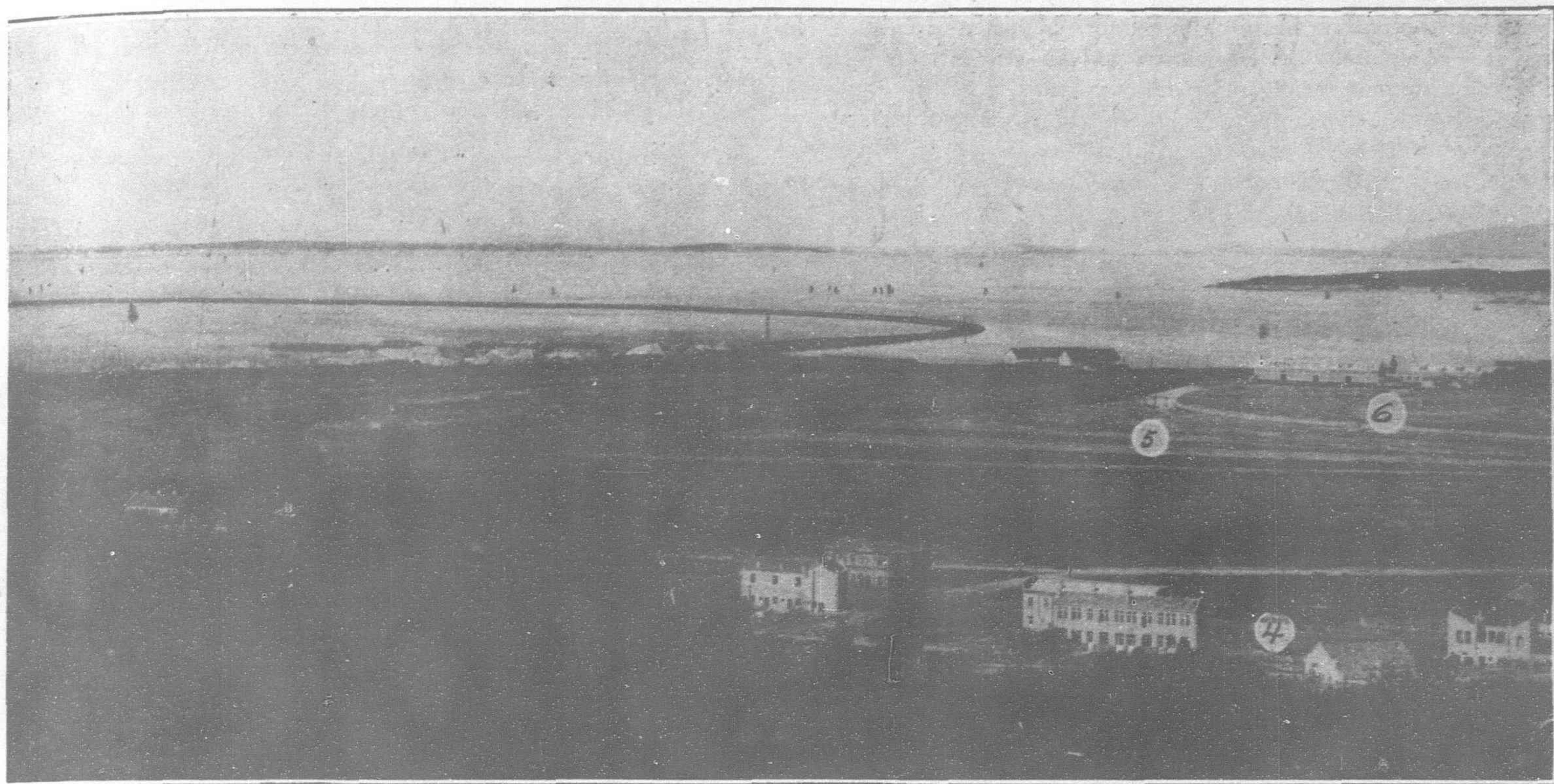
**HOSPITALS.**—An excellent system of hospitals where patients of all nationalities are welcome is maintained in the leased territory and along the Shantung railway.

Especially worthy of notice are those in Tsinan and Tsingtao. The Japanese hospital in Tsinan, the building and equipment of which cost about a million yen in silver was opened in October, 1915. Under the able leadership of Dr. T. Makino, the physicians and surgeons attached to this hospital have succeeded in a short space of time in winning the confidence of the Chinese to an extent



(7) Tank Installation of the Asiatic Petroleum Company. (5) Reclaimed Area. (11) The Town of Syfang, location of the Shantung Railway Shops. (12) Future Reclamation Project. (8) Factory District

## District of Tsingtau, Built by the Japanese



(5) Reclaimed Area. (6) Tank Installation of the Standard Oil Company of New York

attained by few other medical institutions in China, foreign or Chinese. This may be seen from the fact that the number of Chinese patients treated during 1919 totalled 263,000.

This, however, does not represent the actual number of cases treated, patients being counted for statistical purposes as separate entities every time they visit the hospital.

About 35 per cent. of these are paying patients. A noteworthy fact is the increasing number of Chinese women who come for consultation.

Young Chinese girls are being trained as nurses, there being at present twelve taking the nurse's training course.

The main hospital at Tsingtau under the well-known ophthal-



(8) Factory District. (9) Area for New Factories. (10) The Chinese City of Taitungchen

mologist Dr. Bunji Nagano, is always taxed to the utmost limit of its extensive resources. Here, however, the proportion of Chinese patients treated is small, as there are two special establishments for them affiliated with the main hospital.

One is the branch hospital on Shinmachi, where treatment is given free of charge. Dr. Hayakawa who speaks Chinese fluently, an accomplishment which unfortunately but few of the Japanese physicians under the temporary government at Tsingtau have, is very popular with his patients. Out-patients average every day between 150 and 200, while the fifty beds for in-patients are always occupied.

The other hospital for Chinese at Tsingtau is the Puchi hospital, which is exclusively for paying patients. It was opened only in November, 1919, but is already very popular, there being in-patients not only from the interior of this province, but also from other provinces. Both at the branch hospital on Shinmachi and the Puchi hospital, there are several Chinese nurses trained under Japanese instruction and who, like their sisters at the Tsinan hospital, are doing excellent work.

**THE EXPERIMENTAL FARM.**—The experimental farm at Litsun was opened in June, 1917, for the purpose of conducting various experiments with a view to the improvement of agriculture in the leased territory and incidentally also in the adjacent districts.

The farm covers about 78 acres, and is planted with all sorts of grains, vegetables, fruit trees and other useful agricultural produce.

Experiments are also made in raising pigs, poultry, and bees for honey.

Besides well-stocked specimen rooms there is a chemical laboratory where besides original research work, various analyses are made at the request of Chinese farmers. From the results of the experiments so far conducted, it has been shown that this part of China is particularly well adapted for the growth of American upland cotton, tobacco, hops, indigo plants, sugar beets, etc.

Much good has been done by holding periodical competitive agricultural exhibits, which have from the very beginning been enthusiastically participated in by the farmers of the territory.

The institution has become so widely known that applications for seeds and nursery trees are received from various parts of the province.

**THE FORESTRY OFFICE.**—Of the praiseworthy works successfully undertaken by the Germans in Tsingtau and neighborhood, the list is easily headed by the almost magic conversion of the bald

and rugged hillsides into well-wooded slopes covered with many species of trees and shrubs. Following in their footsteps, the Japanese authorities have done much to extend the limits of the wooded sections, the total area newly planted with trees up to this spring being 1,350 acres.

Work has also been commenced upon a far more important scheme of afforestation to protect the water courses which constitute the main sources of water supply to the city of Tsingtau.

This plan when completed will mean the covering of over 22,000 acres with new forests.

Plants from the nursery are supplied to Chinese free of charge in an effort to encourage individual afforestation, the number so supplied during the past year being 235,000.

**THE COMMERCIAL MUSEUM.**—A good beginning has been made in organizing a commercial museum.

The building in which this institution is now housed is too small.

As it is, however, many valuable exhibits have already been collected, giving the visitor a fairly good idea as to the industrial, mineral and agricultural resources of Shantung.

The section devoted to the Japanese exhibits leaves much room for improvement.

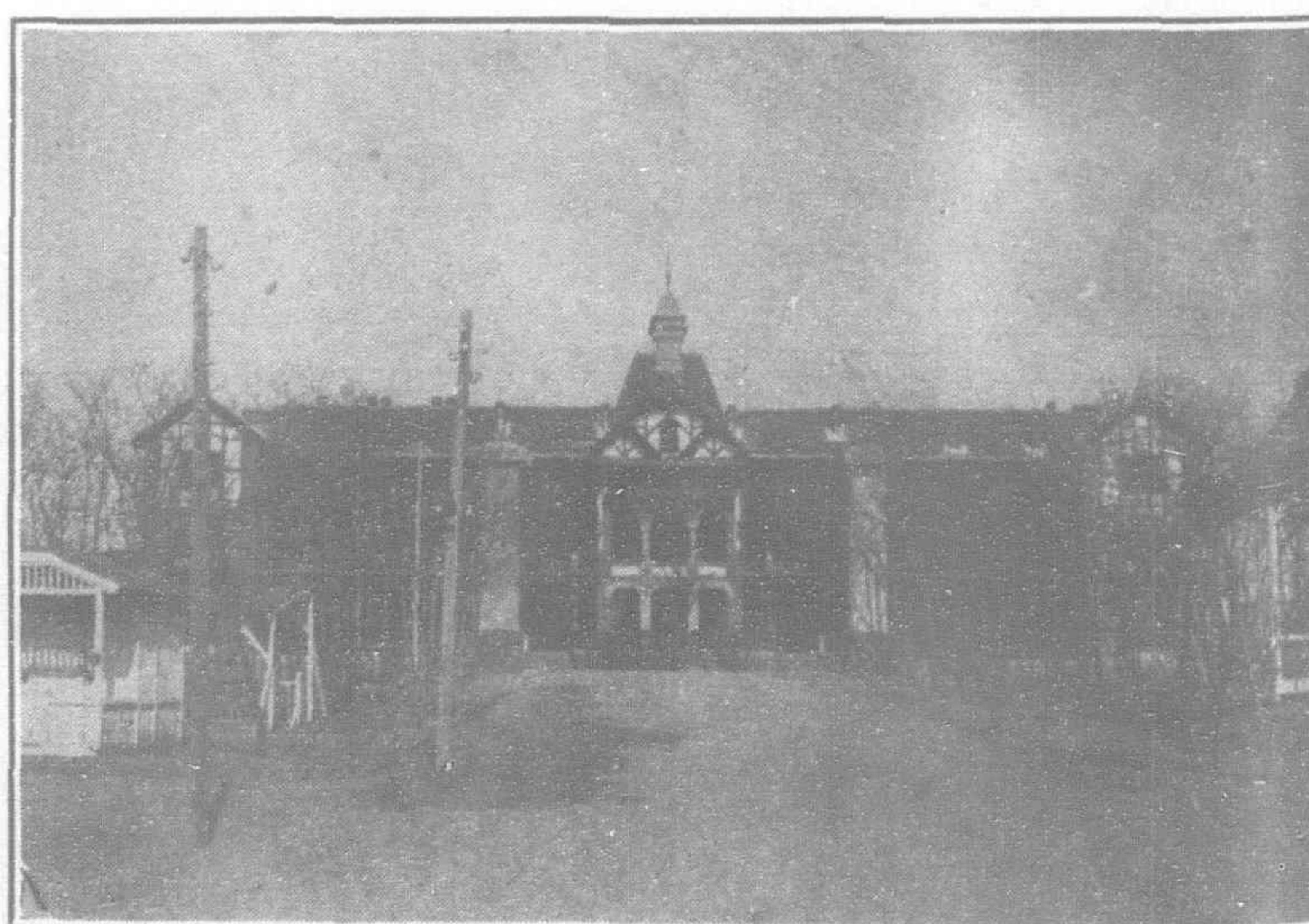
**THE CHEMICAL LABORATORY.**—Next door to the above institution stands a no less valuable establishment, a chemical laboratory.

It was only recently opened, but its usefulness has been so widely recognized by the local community, both Japanese and Chinese, that its staff of experts find it hard to cope with public applications for the analysis of mineral ores, water and other commodities. The establishment is provided with a large and well-selected library of scientific publications in different languages.

**THE PLAYGROUND OF THE EAST.**—Aside from the political, commercial and industrial features of Tsingtau, the place will always remain the favorite summer resort of Europeans in the Far East. It is well called the "Brighton of the East," the one spot on the coast of China where the foreigner can find rest from the heat and escape from the dirt and perfumes of Cathay. Its bathing beach shelves very gradually and is quite free from stones and rocks. With the open sea on one hand, and the green hills and mountains behind (the only place in China covered with trees), miles of excellent automobile roads, excellent hotels, and easy communication with Shanghai, Japan, and the north, Tsingtau will in time, become the playground of the Orient.



The Grand Hotel, Tsingtau

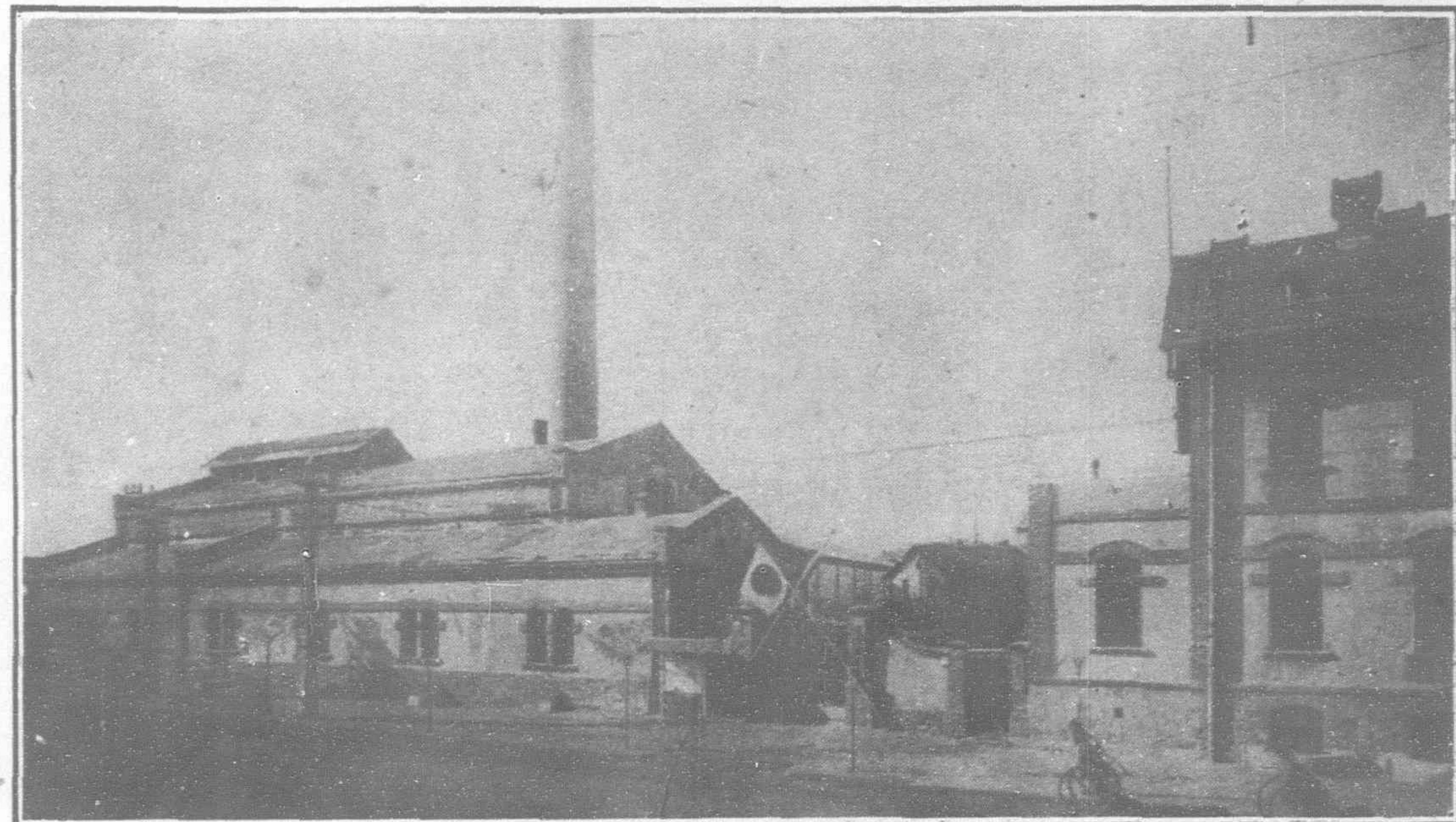


The Strand Hotel at Tsingtau Beach

# Tsingtau Municipal Electric Plant

THE Tsingtau electric plant is operated by the electricity department of the civil administration. The original German plant was equipped with one Siemens-Schuckhardt, 410 kilowatt and two Siemens & Halske 170 kilowatt alternating generating sets driven by vertical compound condensing engines. This was supplemented by a Siemens Schuckhardt 1,000 kva., alternator driven by a Gorlitzer turbine ordered and built in 1913, but not installed until after the Japanese occupation. The Japanese have added one 1,200 kilowatt, 3-phase, 50-cycle alternator, driven by a Parsons condensing turbine at 3,000 r.p.m., made at the Nagasaki works of the Mitsubishi Zosen Kaisha. In addition, there is now being installed another 3-phase generator of 1,500 kilowatt capacity, 3,300 volts, 3,000 r.p.m., from the German-Swedish Electric Company of Sweden, driven by a L. Jungstrom condensing turbine from the Swedish turbine works of Stockholm. The original steam generating plant consisted of two Lancashire and three German water tube boilers. These are now being augmented by the installation of three Babcock & Wilcox water tube boilers of 4,780 square feet of heating surface each.

Up to the first of January 1921, officials and official institutions were supplied with light and current free of charge. The official statistics of the plant show that in 1914 its capacity was 600 kilowatts, increased to 1,400 by the addition of the Mitsubishi-Parsons set, and again increased to 2,600 in 1920. The following table shows the number of 10 candle-power lights, horse-power for motors, and the revenue for the six years ending 1920.



Municipal Electric Power House at Tsingtau

Year	No. Lights	Horse Power	Revenue (Gold Yen)
1914	39,796	620	68,727
1915	53,556	620	134,021
1916	63,064	1,921	217,046
1917	77,599	2,075	311,628
1919	106,934	2,435	387,871
1920 (Nov.)	125,494	2,562	364,615

Electric power is supplied to the municipal pumping station at Litsun. The four municipal drainage pumping stations are also operated by electricity. The above statistics are in keeping with the growth of the city in other directions. The number of lights has about trebled, the horse power supplied to motors quadrupled, while the revenues have increased five hundred per cent. in six years, or since the plant came under Japanese control.



The Beach at Tsingtau

## THE GOVERNMENT ABATTOIR AT TSINGTAU

ONE of the most interesting and profitable of the public utilities of Tsingtau is the government slaughter-house located on Taiseichin-dori. It is the most fully equipped institution of its kind in the Far East, having been constructed by the Germans at a cost of 850,000 marks, and equipped to slaughter 2,000 head of cattle in twenty-four hours. A great impetus was given to the business by contract for the supply of beef to the American army in the Philippines. The United States government has been buying beef for the troops in the Philippine Islands for the past four years, from the firm of Wm. Katz, Tsingtau. The contract this year is for 9,000,000-lbs., price Mex. \$18.40 per 100-lbs., f.o.b., vessel Tsingtau, Chinwangtao, or Taku, at contractor's option.

Messrs. Okura & Co. bought one-half interest in Katz & Co.'s Tsingtau plant in 1918, for about \$600,000 Mex.

United States government inspectors make post mortem and ante mortem inspections for all meat supplied on the United States government meat supply.

The capacity of the refrigerating plant of Wm. Katz is about 1,550,000-lbs. per month in the winter time and 1,000,000-lbs. during the summer months.

The extent to which the Far East is drawing upon Tsingtau for beef is indicated by the following tables compiled by the Japanese authorities:—

### ANIMALS SLAUGHTERED IN THE GOVERNMENT ABATTOIR.

	Cattle	Calves	Swine	Sheep	Goats	Total
1915	8,135	214	5,319	276	32	13,976
1916	15,140	107	6,229	405	15	21,896
1917	25,672	55	6,702	400	105	32,934
1918	36,675	35	8,856	764	19	46,349

### DESTINATION OF REFRIGERATED MEATS

Year	Japan	Manila	Vladiv- ostok	Dairen	Shang- hai	Total
1915	99	—	3,575	135	—	3,809
1916	88	4,733	5,266	390	23	10,500
1917	662	11,902	8,241	666	5	21,476
1918	7,656	19,115	3,156	617	—	30,544

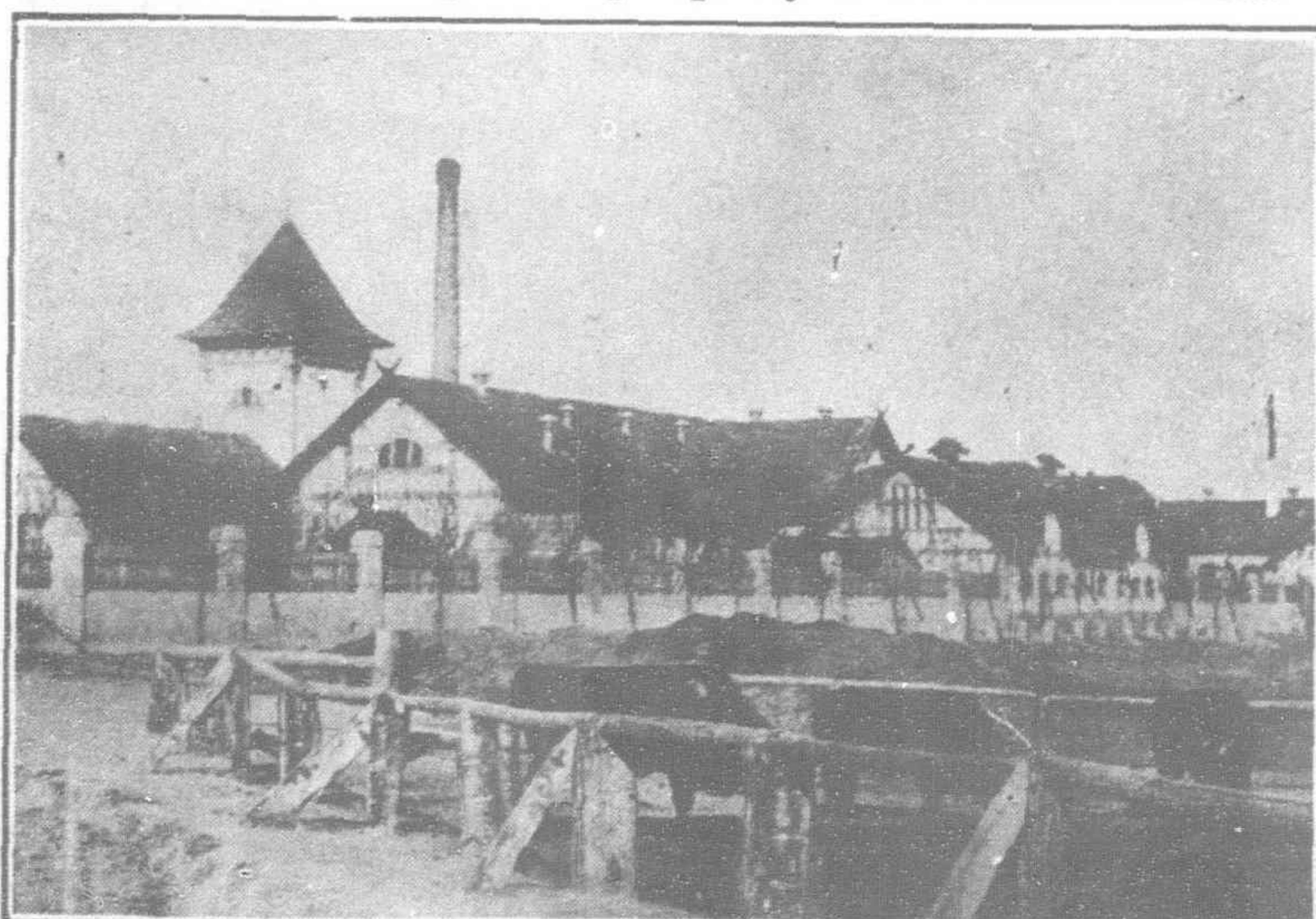
### INCOME OF ABATTOIR

FOR FISCAL YEAR, BEGINNING APRIL 1, AMOUNTS IN SILVER YEN.

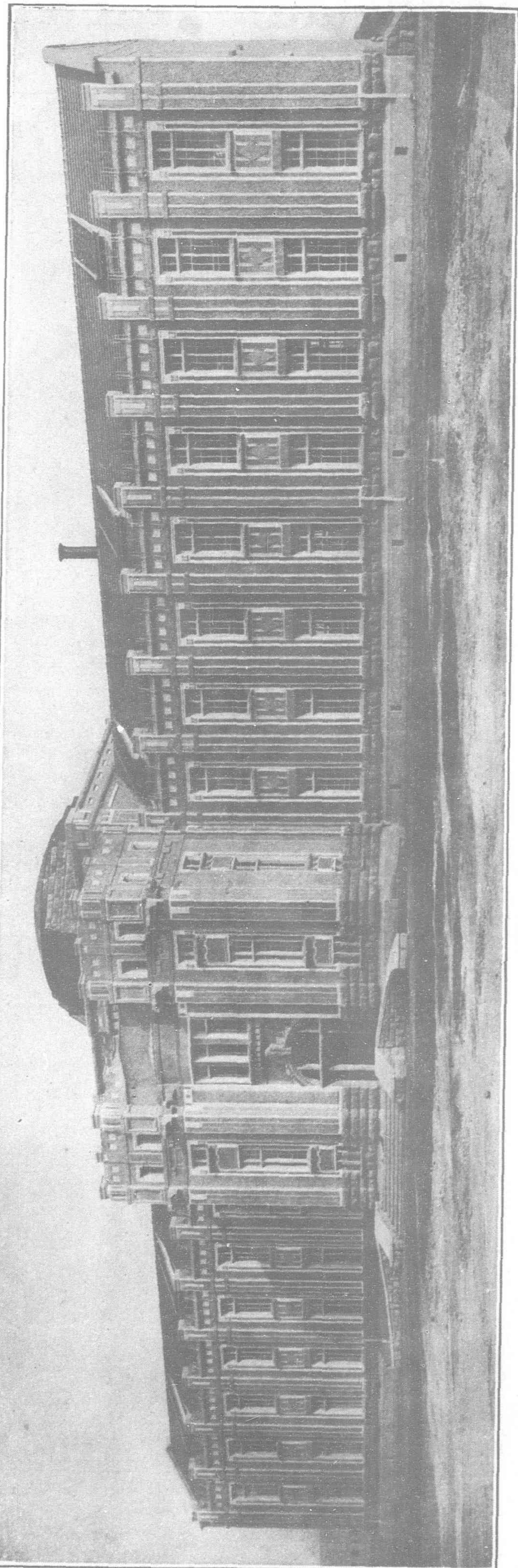
1915, 37,219; 1916, 70,522; 1917, 122,685

The expenses of operation are very slight, so the income begins to assume importance as a source of revenue for the support of other municipal departments. The business gives every sign of still further expansion, as the cattle are drawn from several adjacent provinces. The practice is for the Shantung drovers to buy young calves in the neighboring provinces of Chihli, Shansi, Shensi and Honan and sell them to the Shantung farmers, who fatten them for the Tsingtau beef trade.

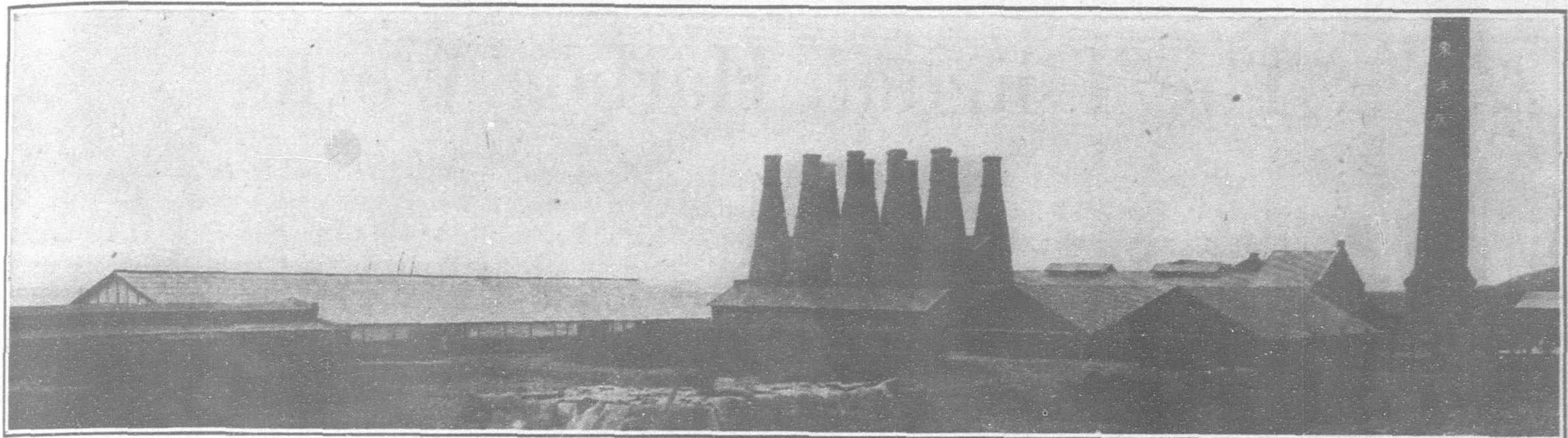
The Japanese are using more and more beef as an article of diet. It is now part of the army and navy ration. It is understood that the Japanese army will call for tenders in the near future for about 500,000-lbs. It is a beginning that may develop into a great business for Tsingtau and bring added prosperity to the Chinese farmers.



Municipal Abattoir at Tsingtau



JAPANESE HOSPITAL AT TSINGTAU



View of the Shantung Cement Works

## The Shantung Portland Cement Works

THESE works were established in September 1917, at Tsankau, near Tsingtau, by the Santo Kogyo Kaisha, Ltd., a Japanese company presided over by Mr. Suyeo Tanaka, a well-known Japanese millionaire. The managing director is Mr. Chikaji Kuga, the ex-chief secretary of the Shantung railway administration, to whose investigations and promotion is due the organization of the company and the erection of the plant. The capital of the company is Y. 1,000,000, one-half paid up.

The machinery for the plant was all made in Japan, the two tube mills by Hirotani & Company and the two crushers by the Mitsuyoni firm, both of Osaka. The original boilers were an old set of German water tube affairs purchased in Tsingtau. These have been superseded by a Lancashire boiler of Japanese make. The engine was bought from the Aichi Cement Company of Japan. It is a Rotey tandem-compound condensing engine made in 1896, still doing good service. The output is about 300 casks of 380 lb. each daily, or 8500, monthly. The plant is to be expanded in the very near future to 700 casks per day, or 20,000 per month.

The quality of the cement is said to be superior to that made in Japan because of the high quality of the limestone (brought from Yangtze, in Shantung), the clay, and the Tsuchuan coal which is specially adapted for the manufacture of cement.

Reports on the cement have been made by the central laboratory of the South Manchuria Railway and the government laboratory at Tsingtau. They are as follows:—

### I. Chemical composition:

Insoluble Residue	...	...	...	0.30
Silica (SiO <sub>2</sub> )	...	...	...	20.14

Alumina (Al <sub>2</sub> O <sub>3</sub> )	...	...	...	5.00
Oxide of iron (Fe <sub>2</sub> O <sub>3</sub> )	...	...	...	3.40
Lime (CaO)	...	...	...	64.34
Magnesia (MgO)	...	...	...	1.34
Sulphuric anhydride (SO <sub>3</sub> )	...	...	...	1.50
Potash (K <sub>2</sub> O)	...	...	...	0.44
Soda (Na <sub>2</sub> O)	...	...	...	0.26
Loss on ignition at 212° C.	...	...	...	3.17

### II. Fineness:

Percentage Residue on 900 sieve ... nothing

### III. Setting time:

Initial set	...	...	...	...	2 hours
Final set	...	...	...	...	5 hours 42 min.

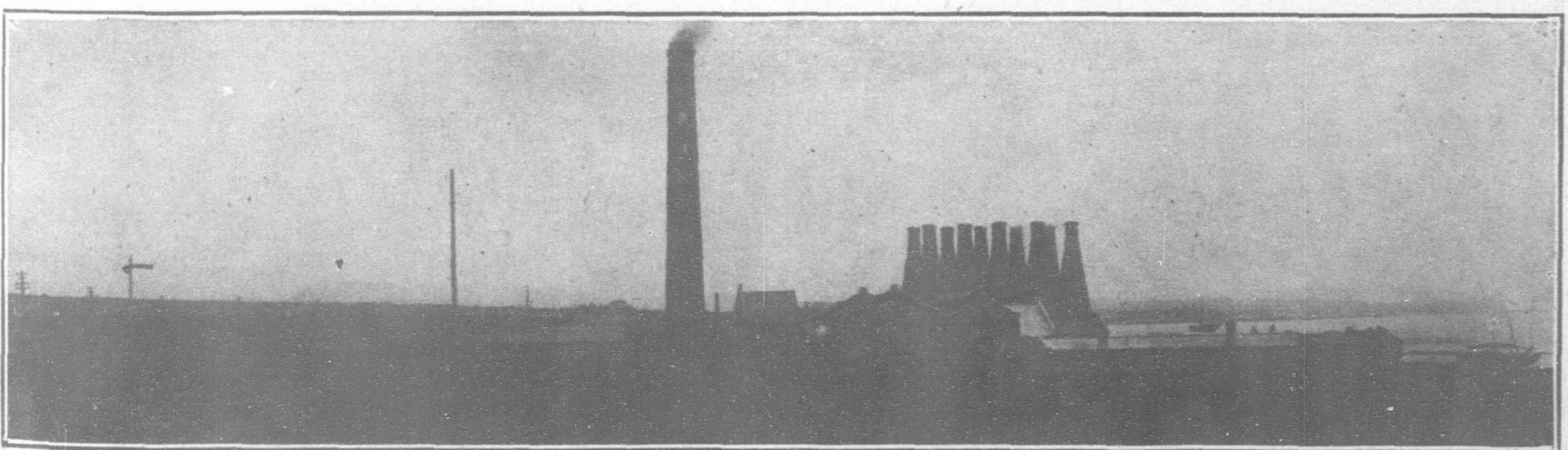
*Note.*—Percentage of water used to make past 26%.  
Temperature of Laboratory room 19.5° C.

### IV. Soundness:

Result of 1 hour and 3 min. boiling test	...	good
Result of 28 days kept in water	...	good

### V. Tensile Strength:

Cement	7 days	...	...	805 lbs.
„	28 days	...	...	926 lbs.
„	and Sand (1 and 3)			
„	7 days	...	...	364 lbs.
„	28 days	...	...	434 lbs.



Another View of the Shantung Cement Works

# The Tsingtau Harbor Works

**T**O reference to Tsingtau would be complete without a description of the harbor and its improvements to date. Kiaochou Bay, a natural land-locked harbor of great size, has been used as a haven for many centuries by the Chinese junks that trade around the east coast. It was found that, both for depth of water and land facilities, that part of the bay on the right-hand entrance from the ocean lent itself most to the building of harbor works. This decided the site of the German town of Tsingtau, although it necessitated a circuitous route for the railway to and from that point.

The small harbor shown on the accompanying plan is a natural haven used for fishing boats and trading junks. Nothing has been done there beyond providing roads along which goods are taken to and from the small craft frequenting the harbor. Hundreds of these picturesque vessels are always lying there, and the trade they bring to the port is considerable. The Japanese have made some improvements to this harbor.

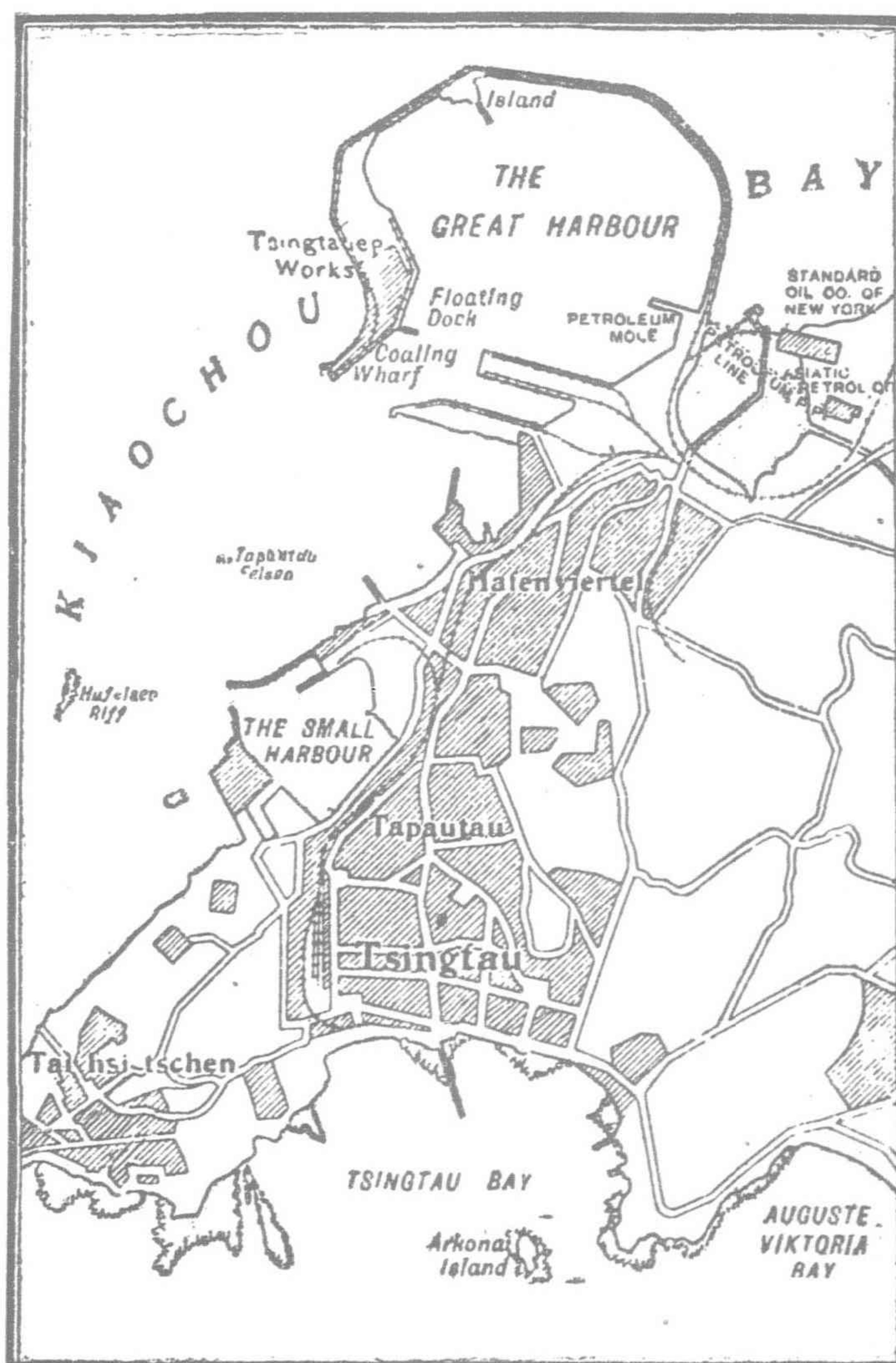
The construction of the great inner harbor, shown on the accompanying plan, was undertaken by the German government in 1899. The width of the entrance is 280 m., and the minimum depth of water 10 m. On the right is the commercial harbor with three moles, two of which are 550 m. long and one 750 m. There is also an end berthing space of 100 m., making a total of 1,950 m. The mean depth of water alongside is 9.50 m. The naval harbor works are on the left of the en-

trance. There was a small island here, which was made up and built around so that it forms a large and convenient site for the workshops and stores. The old German machine shops here have been dismantled. The railway line is brought around to this point as well, and the bank made by the railway formation forms a breakwater which completely encloses the harbor. In making this, advantage was taken of a natural half-circle of rocks and small islands with water space intervening, so that it was not much more expensive than a land embankment.

The naval wharfage presents a front 1,000 m. long. Here there is a depth of 10.50 m. of water. There was a good deal of dredging done to obtain this, but once cleared it was found that little or no silting took place, so that the cost of harbor maintenance in this respect is small. The tidal rise is 2.60 m.

Fig. 2 shows the construction of the wharfage and piers. The walls rest on wooden piles driven diagonally and braced together. These are rammed between with sand filling from the solid bottom to the top to protect them from the attack of marine worms, and also to prevent rot from air and water contact. The outside piles are of ferro-concrete, standing at a slight angle. They are close together, and form a fender for the protection of the wooden piles on which the concrete and masonry structure rests.

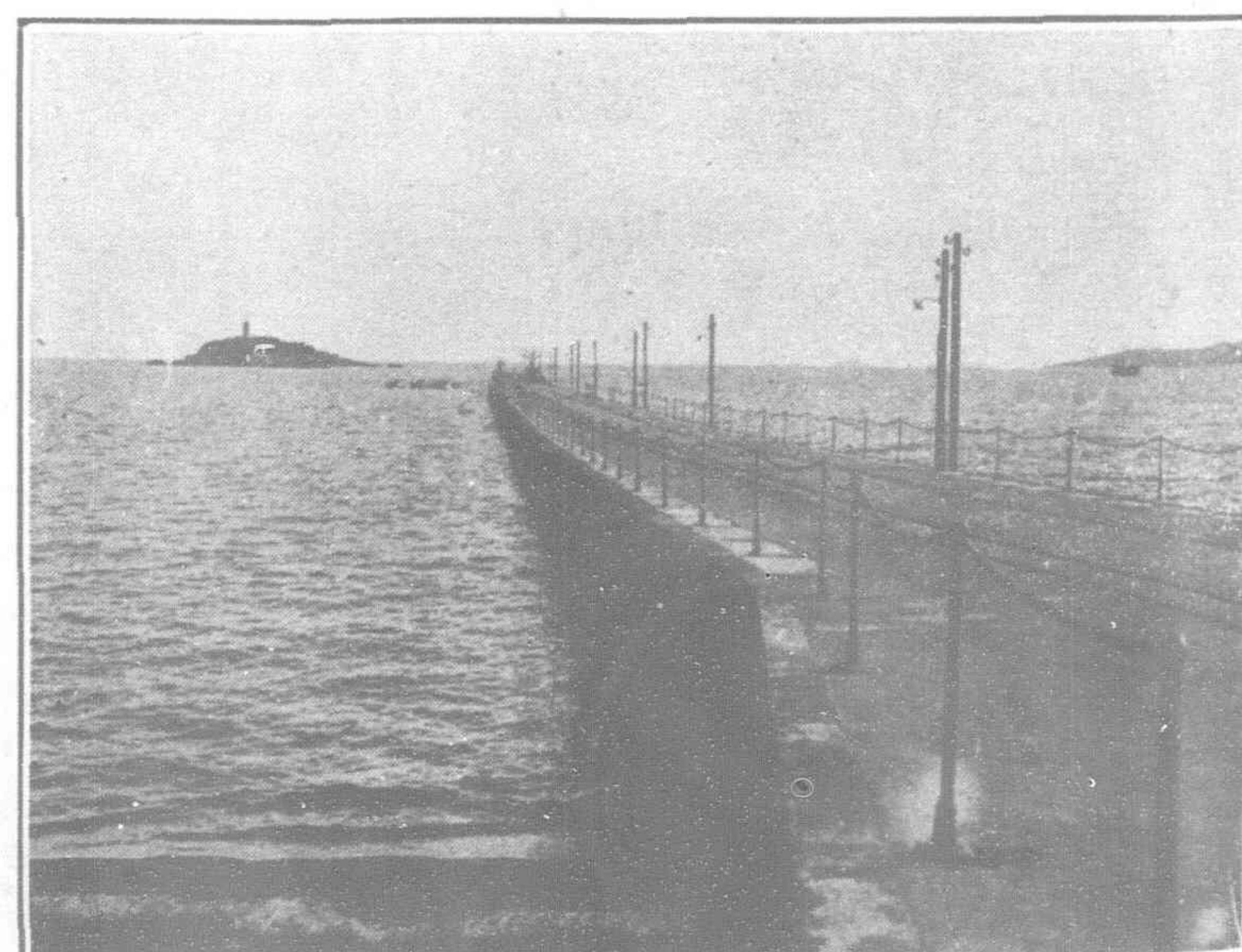
No graving docks have been built. The floating dry dock of 16,000 tons displacement used by the Germans, was sent to Japan




Plan of Tsingtau Harbor



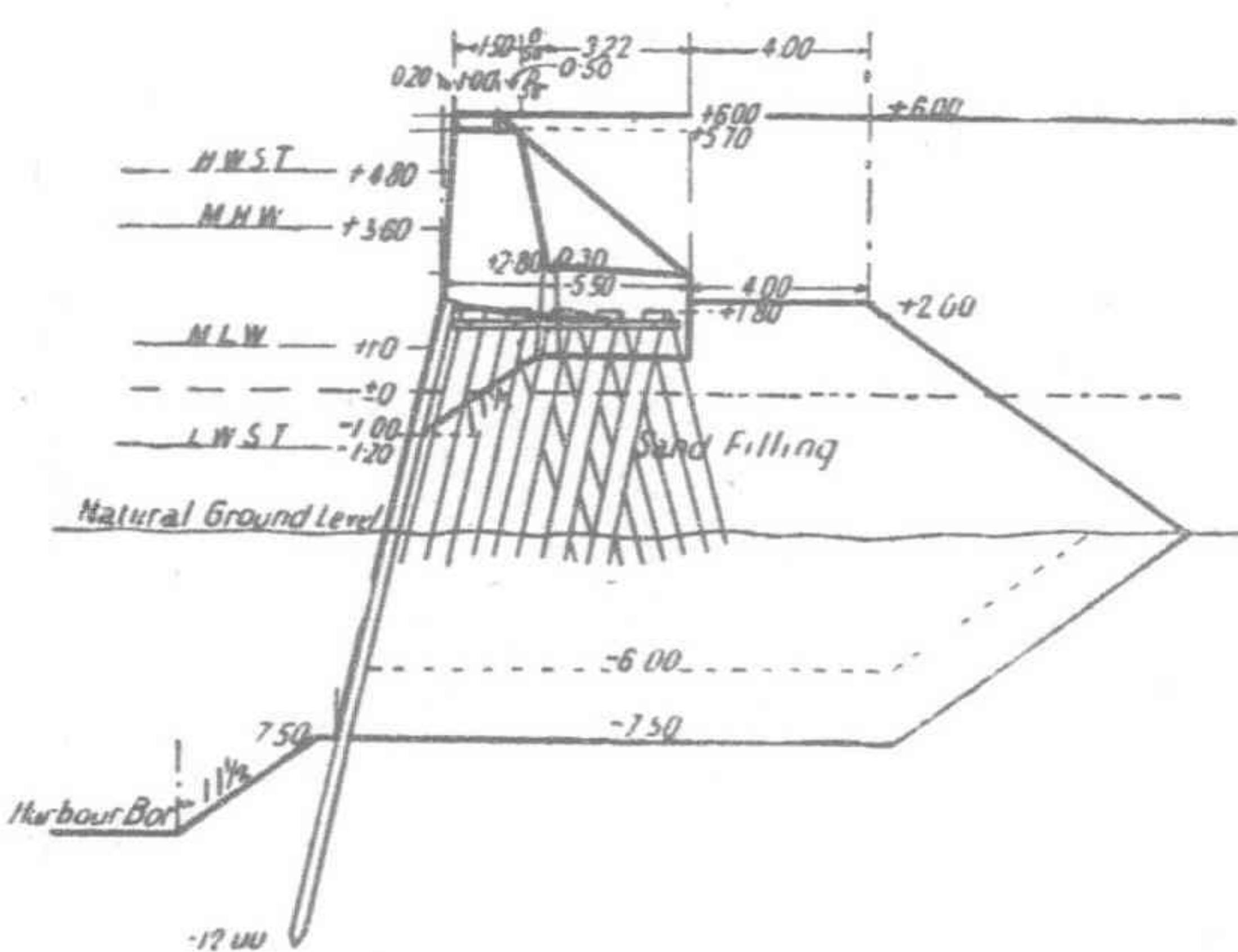
No. 2 Wharf, Showing Railway Connection



Tsingtau Jetty



General Plan of Tsingtao Showing the 1921 and Future Harbor Improvements. This map also clearly shows the new districts laid out to streets and built up under the Japanese administration



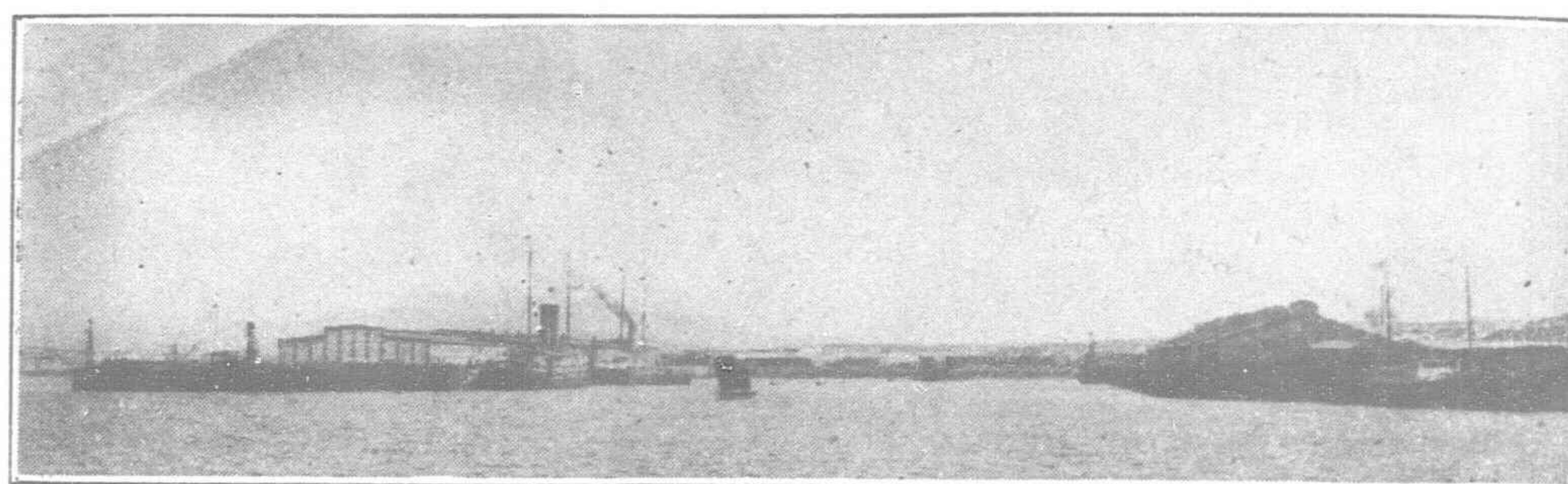
Wharf Construction, Tsingtau

As explained elsewhere, much of the dissatisfaction of foreigners with the Japanese control of the port, has centered around their management of the wharves ; which, it is contended, permitted them to discriminate in favor of their own shipping in the matter of immediate berthing and unloading. It has been difficult at this late date to get at the inside of facts surrounding these incidents, and it may be assumed that under military control from 1914 to 1919, or during the progress of the war, conditions in Tsingtau did not differ much from those found in other belligerent countries. There seems to be little doubt that the Japanese were very strict in the application of their war-time regulations, and at times Japanese vessels had the

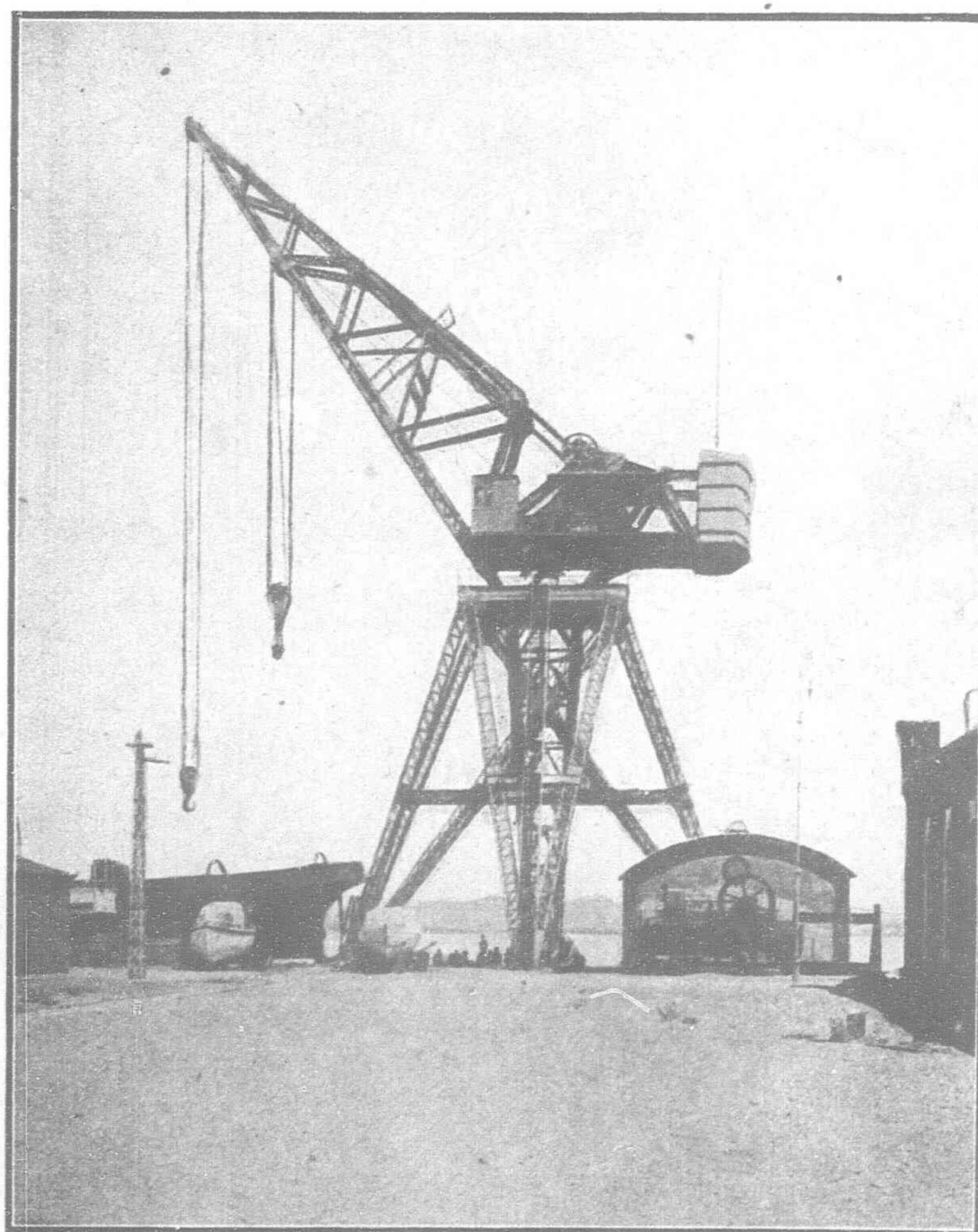
shortly after the capture of the port. At both harbors, loading and unloading direct between railway trucks and vessels can be done. All the materials for the Shantung railway, and also for the northern section of the Tientsin-Pukow Railway, were landed at Tsingtau end.

preference in berthing and unloading. However, under any military control, with an army to be fed and supplied in the background, there are always plenty of justifiable excuses for giving preferential treatment to ships carrying national cargo.

The facilities of the port have been taxed heavily to take care of the rapidly increasing trade and tonnage. The total amount of merchandise passing through the port jumped from 355,556 tons in 1915, valued at Taels 23,137,160 to 1,182,125 tons valued at Taels 67,376,324 in 1919. The total number of vessels entering and clearing from the port increased from 1,178, with a tonnage of 2,175,202 in 1915, to 2,722, with a tonnage of 2,274,956, in 1919. The volume of merchandise more than trebled in five years with a very slight increase in the total tonnage of vessels entering and clearing during the same period. This slight increase could not materially tax the capacity of the wharves, but placed a strain on the warehouse and transportation facilities. The number of Japanese vessels which entered the port in 1917, was 643, cleared 637, with a total entrance and clearance tonnage of 1,116,608. In 1919, this number had increased to 2,331 vessels with a total tonnage of



View of the Tsingtau Wharves



150-TON ELECTRIC CRANE

The was damaged by the Germans, but has been repaired and operated by electricity from the municipal power plant. It is now in operation.

1,553,565. The only other nation which figures prominently in the shipping returns of the port is Great Britain. Vessels flying the British flag entering and clearing from the port in 1917 numbered 134, with a total tonnage of 319,622. In 1919, this had jumped to a total of entrances and clearances of 214 vessels, aggregating 519,998 tons. Eleven American vessels entered and cleared in 1917 and 29 in 1919.

The volume of trade and the prosperity of the port is increasing rapidly. The higher Japanese authorities express themselves as being extremely anxious to afford equitable treatment to vessels of all nations, and add, that had the complaints about their alleged "inefficiency and discrimination" been brought before their notice, there would have been no necessity for diplomatic correspondence. However much they may regret the incidents and ensuing explanations, they are apparently determined to obviate, as far as possible, any just complaints in the future. Not only are the railway and harbor authorities alive to the situation, but the government is taking no further chances of its good faith being placed in question. To this end, the south side of Wharf No. 1 will be dredged and completed for berthing during the current year, and work will be started on the new No. 3 Wharf, which in the past, has been a small affair for the unloading of oils and other inflammable materials.

The Japanese have looked far ahead and provided for the proper development of the port and wharves. On the government engineer's maps, there appears the projected extension of the reclamation area which will complete the foreshore up to the Syfang Railway Shops, and the construction of four other large wharves, similar in size to the first three. This, of course, will call for a radical change in the appearance of the harbor, as the mole will have to be broken and built further out. There is plenty of room in Tsingtau for the proper expansion of shipping facilities, and there appears no good reason why foreigners should not take advantage of the opportunities offered to participate in this development.

# Industries at Poshan

**P**OSHAN has been celebrated for centuries for its glass works, and, according to the *China Advertiser*, the leading factory will be financed and directed by Americans. The paper adds, "It must be remembered that the Company, which is the property of the financial department at Peking, was mortgaged to the Bank of China for a sum of half a million dollars. In 1916, the factory was occupied by the revolutionary leader, Wu Ta-chow, who sold it to a certain Japanese. Although a contract was drawn up, Mr. Hayashi, the then Japanese Consul at Tsinan, advised the Japanese concerned to cancel the negotiation, in view of the possibility of the deal leading to a complicated dispute between China and Japan later on. Afterwards, experts examined the works at different occasions, but all united in the opinion that the machinery being antiquated, nothing could be done unless it is replaced by modern machines, and so the factory was left untouched. According to the report, the American gentleman interested not only agreed to pay off the old debt to the Bank of China, but decided to run the works under Sino-American joint corporation, capitalised at 5 million dollars, new machinery being installed in January next.

It has been impossible to corroborate this report on the ground in Shantung. Whenever foreign capitalists are reported to be in negotiation with Chinese in Shantung, the native press jumps to the conclusion that it must be American. The following is a list of the most important Chinese industries in Poshan.

## Poshan Potteries

Number of pottery-makers—about 60 families (in Poshan and vicinity). Capital used for :

4 Animals . . . . .	Mex. \$200
1 Clay-Mortar . . . . .	„ \$20
1 Kiln . . . . .	„ \$300/500

Japanese-maker (a) Nikka Kungyo Kabushiki Kaisha (Sino-Japanese Pottery Factory).

Erected—1916

Number of Kilns—6

Capital—Y.200,000

Manufactures of drain-pipe, bricks and other articles of clay.

(b) San Yeki Koshi (Japanese).

Erected—1915

Capital—Mex. \$30,000

Manufactures—lime, drain-pipes, bricks, and other articles

## Poshan Glass Factory

Founded—before the Ming Dynasty

Number of glass makers—

Plate-glass . . . . .	8 families
Bar—glass . . . . .	40 „
Glass—articles . . . . .	50 „

Poshan Poli Kung-Su (Poshan Glass Manufacturing Co.)—Chinese

Erected—1904

Capital—Tls. 150,000 (afterwards increased to Tls. 1,000,000)

Closed—1911 (on account of bad quality of the articles)

Machinery—German make

Other plate-glass makers—8

Number of workmen employed—about 110

Quantity of the plate made—about 100 cases

## Poshan Lime Kilns

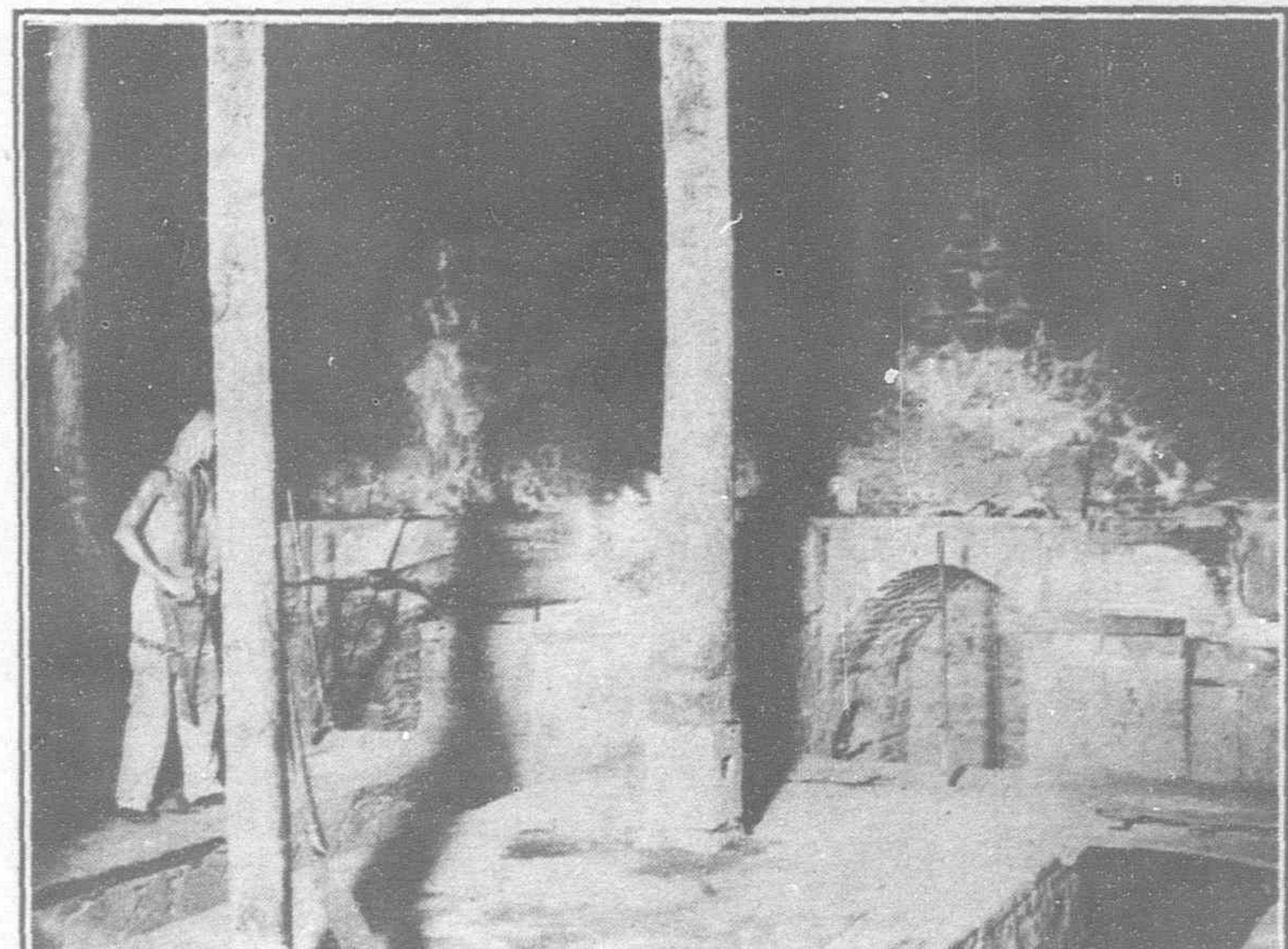
Number of makers—about 70

„ „ kilns—about 70

Price—60/70 silver yen (per 15 tons)

## Poshan Color Works

Quantity—10,000/20,000 chin (per day)



A Native Glass Works at Poshan



Chinese Potter at Work, Poshan



Chinese Pottery Works at Poshan

# The Parr Terminal at Oakland, California

By William C. Rea

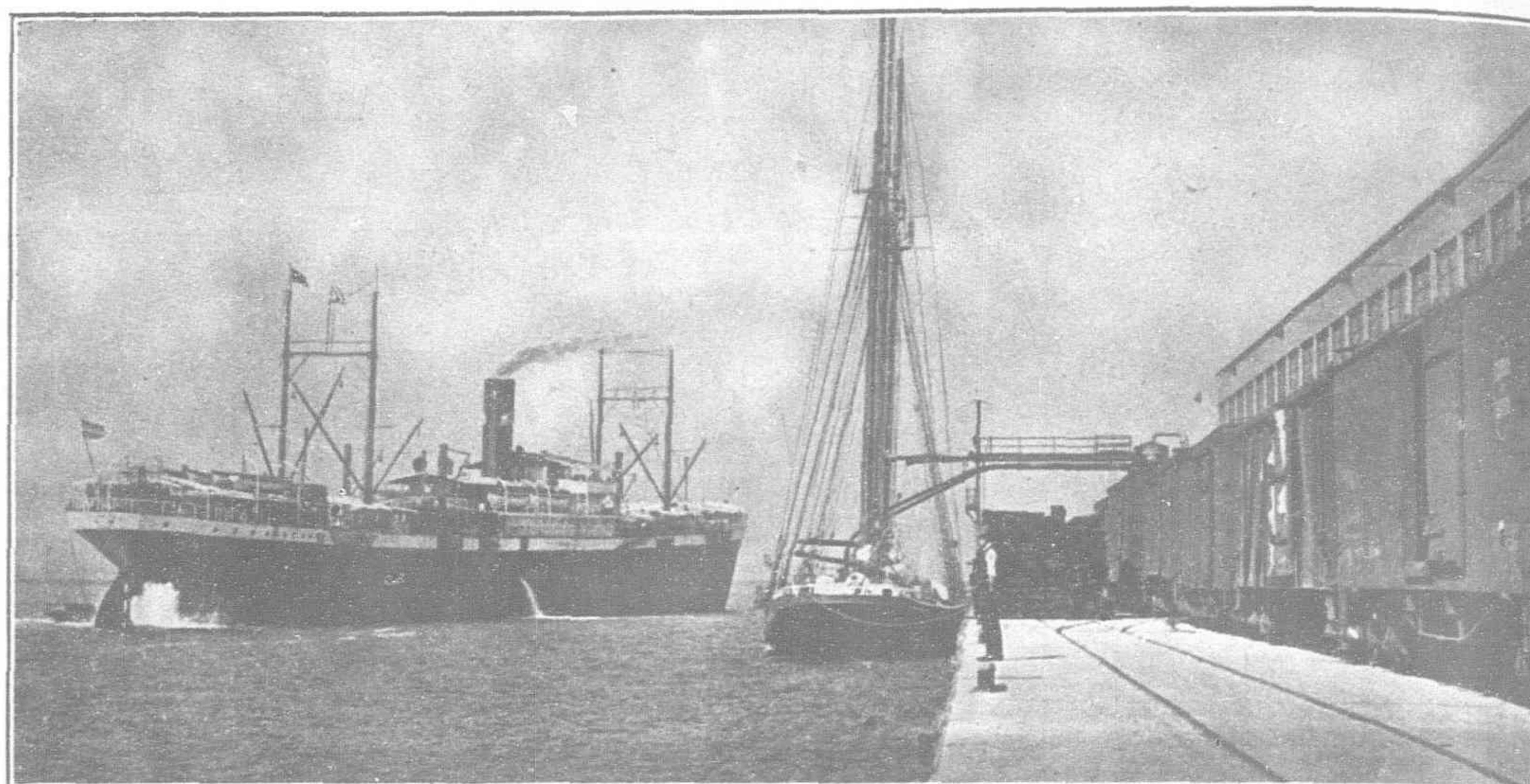
**F**OR the first time in its history, San Francisco Bay possesses a point on the mainland side where deep-water vessels may unload their cargoes directly into the cars of the principal trans-continental lines and thereupon load cargoes easily assembled by rail for their return trips.

This is the recently developed Parr Terminal on the Oakland western waterfront, where permanent railway tracks have been extended to connect with the Santa Fe, Western Pacific and Southern Pacific systems. The principal wharf is 1,500 feet in length, raised four feet to the grade of the adjacent wharf of the Albers Milling Company.

An invitation to Far Eastern shippers to use this new terminal has been extended through various civic and commercial organizations by Fred D. Parr, president of the new enterprise. It is Mr. Parr's belief that much freight consigned to Californian and other North and South American points from the Orient, can be economically handled from this rail and water terminal on the mainland.

At the Parr Terminal a cargo shed or slip-head house, 120 by 500 feet, is already erected upon the new apron. This provides not only for coastwise and river steamers, but is entirely suitable for trans-Atlantic or trans-Pacific ships.

The ultimate program of development by the Parr Terminal Company on present holdings includes the provision for two great



View of The Parr Terminal—Showing where Rail and Water meet at Oakland, California

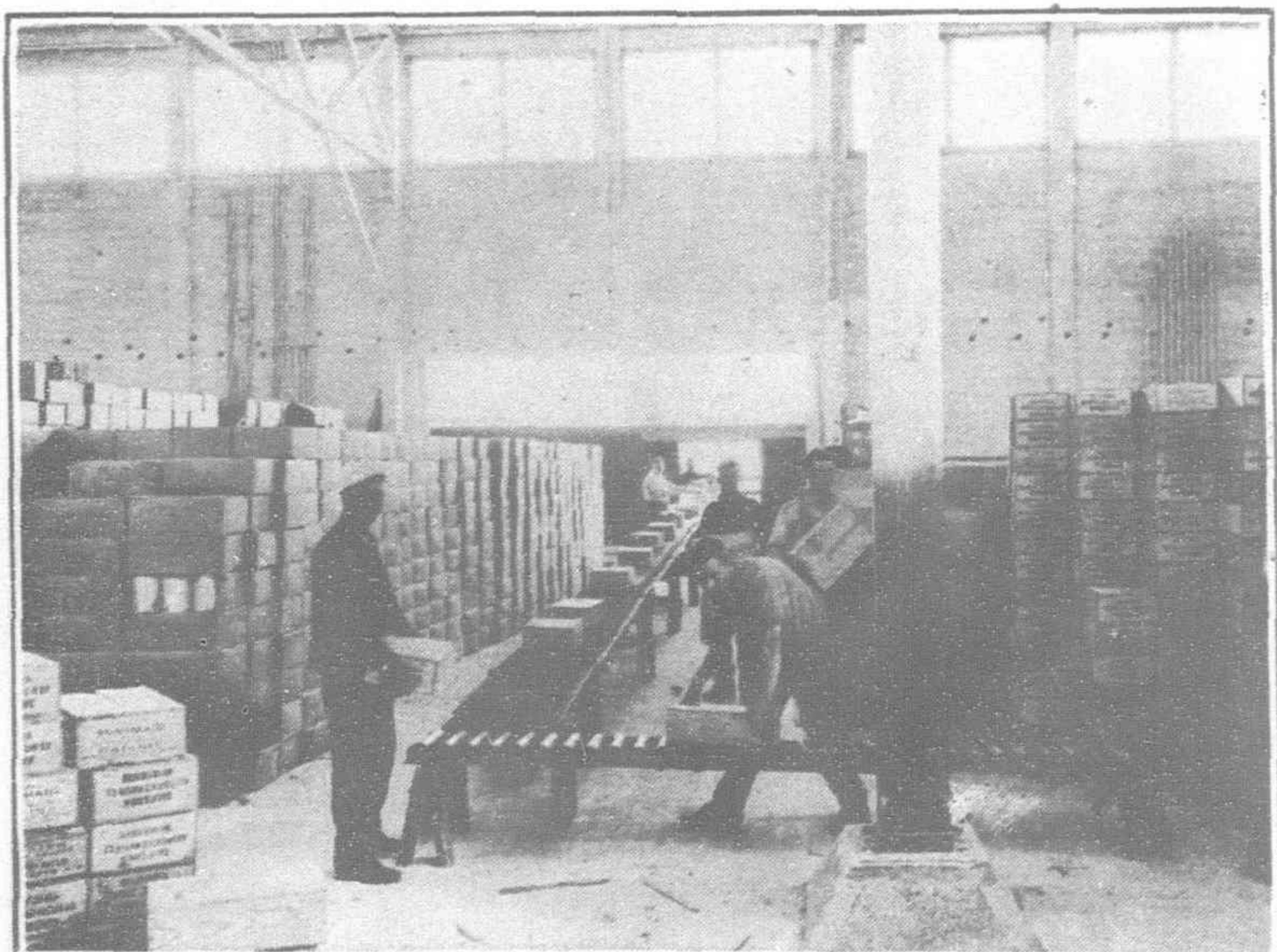
ocean piers, modelled upon the exceptionally successful Port Commission Ocean Piers at Seattle, which in turn were adapted from designs of piers at Manchester, England.

The Parr Terminal was recently formally opened when more than one thousand members of the Oakland Chamber of Commerce city and county officials and prominent city officials were the guests of the company, at a luncheon and reception in the main warehouse.

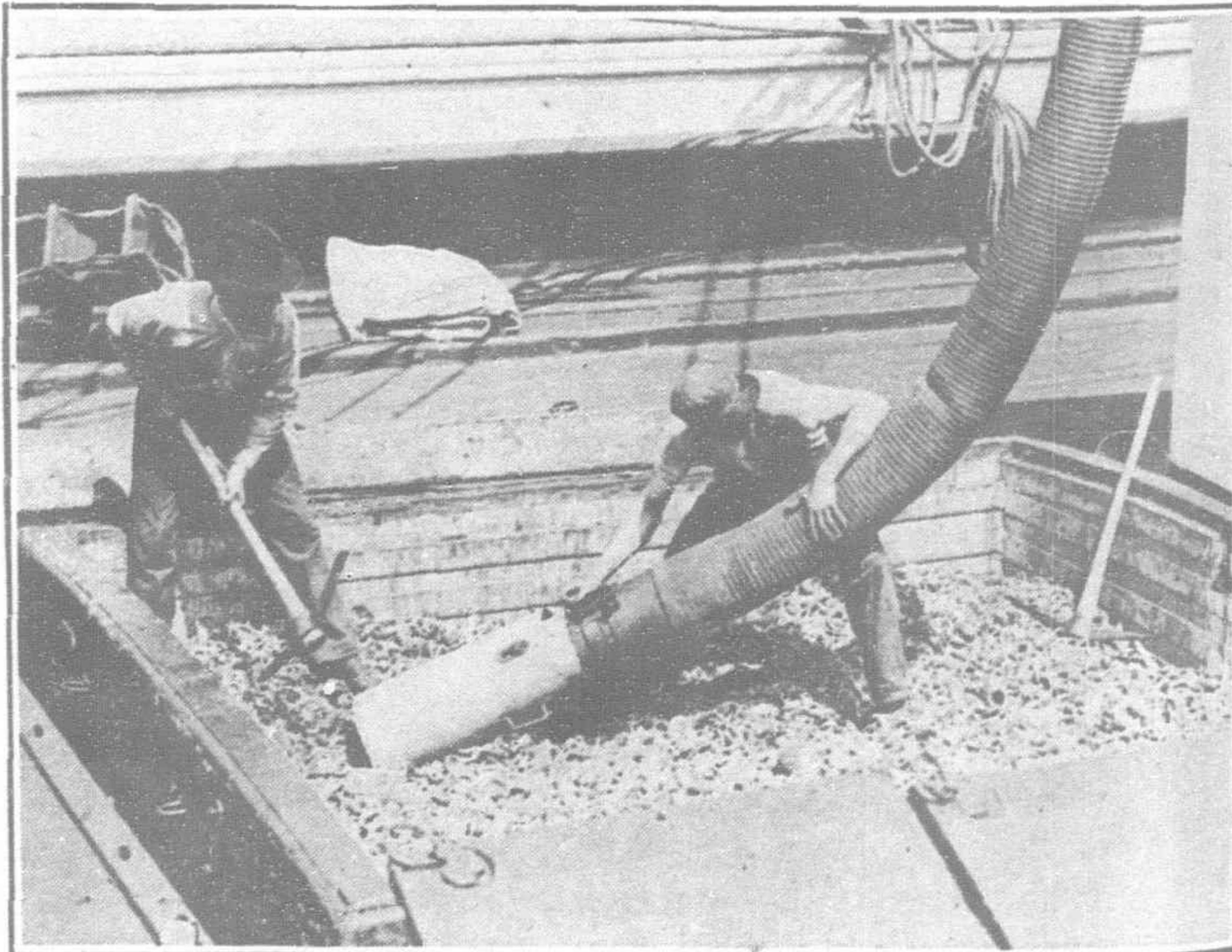
The natural gravitation of commerce has already been proven with this Oakland terminal, obviating the necessity of transhipping freight across San Francisco bay to main rail heads after it has been unloaded at San Francisco piers. The Parr Terminal has proven itself the natural "break cargo" point, where the sea route ends, and the trunk railways commence their trans-continental haul.

The terminal has just been designated as the principal San Francisco bay port of call by two Atlantic steamship lines, by a chain of United States Navy supply ships; it is the lumber discharging and loading depot for certain Pacific Coast lines; big vessels from the Orient have berthed there and thousands of tons of copra from the holds of South Sea Island schooners has been transferred from ship to cars by the pneumatic vacuum system.

Mr. T. J. Wade, general freight agent and Pacific Coast representative of the Atlantic-Gulf and Pacific Steamship Line has just completed arrangements with the Parr Terminal, whereby the line



How Gravity is made to work at Oakland's New Model Terminal



Unloading Philippine Copra by pneumatic device at Parr Terminal, Oakland, California

he represents will have vessels call at the Oakland western waterfront on a regular schedule every two weeks. This was the first Atlantic seaboard line to name Oakland as a regular port of call. The vessels also call at Baltimore, Philadelphia, Mobile, Los Angeles and San Francisco. The first steamer of this line to call at Oakland was the *Cape Romaine*, October 20 last with a general cargo from the Atlantic Coast. The steamer loaded a return cargo assembled at the terminal. Freight is continually assembled from all points for the steamers of this and other lines.

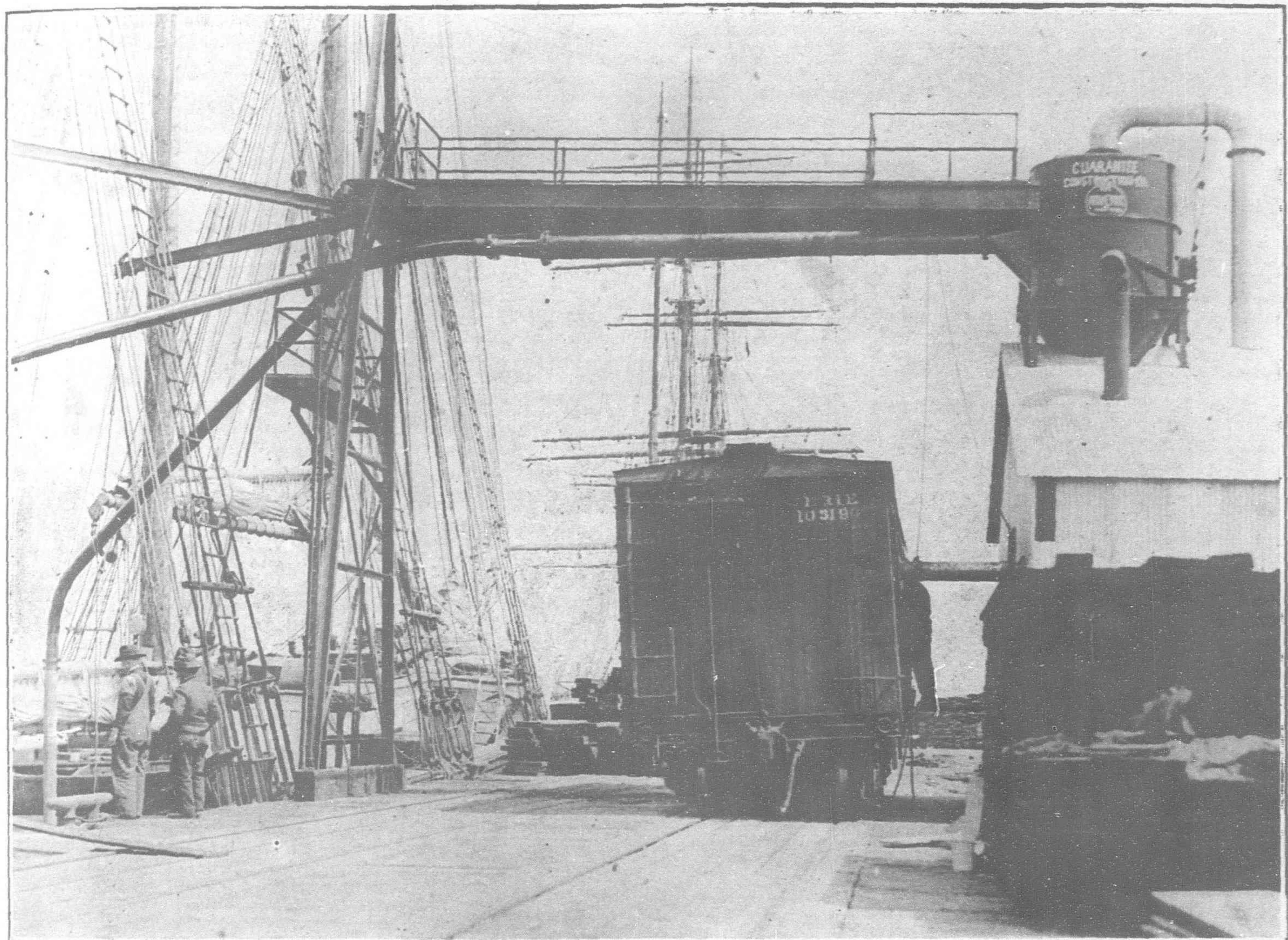
The *Tjitoreum*, Java-Pacific freighter of 12,000 tons displacement, is another big vessel recently docking at the Parr wharves. After taking aboard a consignment of lumber, the steamer proceeded to Seattle where she completed the loading of her cargo for Asiatic ports.

out of the hold of the vessel and deposited in cars on the wharf waiting to hurry the precious material to the manufacturers.

An energetic campaign is being conducted by the Parr interests to secure tonnage-producing tenants for their industrial blocks. Provision is being made for long term storage and distribution of Philippine and other Oriental vegetable oils with requisite pipe lines, heating systems, electric pumps and working tanks, as well as providing facilities for storing hemp, rubber, pineapples, sugar, coal, cotton, structural and railway steels, teakwood and other timbers, heavy machinery and so on.

Mr. R. S. McElwee, of the department of commerce, author of the text book, "Ports and Harbor Facilities," recently said of the Parr Terminal at Oakland.

"This is an exceptionally complete and modern layout, ac-



Pneumatic stevedoring device, unloading Copra from hold of vessel into awaiting freight car.

A new record for copra shipment through Oakland was made in one week recently. Six sailing vessels were at one time unloading 4,795 tons of copra from the South Sea Islands directly on to the cars for shipment to refineries across the country. At the Parr wharves the schooner *Inca* unloaded 1,190 tons with the new vacuum device depositing the copra into waiting cars on the docks. The other vessels discharging were: schooner *Forester*, 708 tons; schooner *Repeat*, 400 tons; schooner *Talbot*, 894 tons; schooner *Irwin*, 381 tons; barkentine *Lahina*, 1,222 tons. Unloading a 400-ton cargo of copra in seventeen hours was the record made another week at the Parr Terminal. The three-masted schooner *Zampa* from Suva in the South Seas, berthed at 11 a.m. one Thursday. At 4.00 a.m. Friday, the last bit of copra had been sucked

cording to our latest experience and thought in port development. Altogether your plan fulfills all the points of cardinal importance and such a terminal will be nothing short of epoch making."

The freighter *Orani* of the European-Pacific Line, was the first of a fleet of sixteen vessels operating between Oakland and European ports, to dock at the Parr Terminal. The *Orani* is a 10,000-ton vessel, one of the largest to enter Oakland harbor. She loaded 10,000 tons of barley, sailing for Hull, England, carrying the largest shipment of barley that ever passed through the Golden Gate.

These barley shipments are being handled for the Williams & Dimond Company, agents for the American-Hawaiian Steamship Company and also agents for the European-Pacific Line.

# Engineering, Financial, Industrial and Commercial News

## RAILWAYS, NEW LINES, SUPPLIES, ETC.

**Tientsin-Pukow Railway Congestion.**—Congestion is very heavy on the southern end of the Tientsin-Pukow Railway. Hundreds of thousands of tons of stocks are awaiting transportation at the principal stations along the line. The ministry of communications has been requested to send sufficient rolling-stock to clear the goods.—*Chinese Press Report*.

**New Link, Canton-Kowloon.**—A plan is on foot to build a railway from Waichow to Ping Wu Station of the Canton-Kowloon Railway, a distance of 45 miles, has been passed by the Waiyang chamber of commerce. About \$3,000,000 is needed to cover construction.

**Japanese Railway Electrification Plans.**—The bill for the electrification of the Japanese state railways is to be re-introduced in the Diet by the railway department. The government plans include several hundred miles of new lines.

**The Chinese Rolling-Stock Loan.**—The loan to be used exclusively for the purchase of rolling-stock for the Peking-Suiyuan, Peking-Hankow, Tientsin-Pukow and Shanghai-Ningpo Railways, signed at Peking, contains the provision that all rolling-stock will be purchased in the open market. The lending banks will appoint experts to examine the cars purchased, and will be afforded facilities for examining them half-yearly, in order to see they are kept in good condition.

**New Railway Line, Tzeliutsing, Szechuan.**—A European railway engineer has commenced surveying for a short line from Tzeliutsing to Tenchingkuang, a small town at the mouth of the little river that flows through the Szechuan salt area. The salt has always passed down this little stream in barges, but the supply of water is very meagre and it takes the boats a long time to reach Tenchingkuang. The railway line, therefore, is very much needed.

**Nationalisation of Nanzing Railway.**—The shareholders of the Nanzing Railway have petitioned the government to nationalise the line by purchasing it from the present holders.—*Chinese Exchange*.

**Famine Labor for New Chinese Lines.**—The proceeds of the railway surtax will be utilized for the construction of the Chefoo-Weihsien and Tsangchow-Chenting Railways with famine labor. These railways have been chosen because they are already surveyed and famine sufferers could be employed on them immediately, but the famine revenues will be utilized solely for manual labor.

**A New Chihli Railway.**—The Chihli provincial assembly has passed a resolution in favor of the construction of a railway from Tsangchow (Tientsin-Pukow Line) to Shihchiachuang (Peking-Hankow Line), the funds to be raised among the gentry and the merchants of Chihli. The estimated cost of the railway is between six and ten million dollars. Influential men of the province are applying to the government for permission to construct the railway.

**Japanese Did Not Object.**—The Japanese legation at Peking states that Japan never objected to the construction of the Chefoo-Weihsien Railway, for which the Germans formerly claimed the right to furnish funds in the event of foreign money being required. Japan would doubtless protest in the event of any other foreign money being offered, but so long as the line is being constructed with Chinese money there is no ground for protest. Incidentally, the Chinese thus far do not propose

to link up the Chefoo-Weihsien and Shantung lines, which was the condition upon which the Germans based their claim to the preferential right of supplying foreign funds.—*Reuter*.

**Tsinpu Railway Nets \$3 Million Profit.**—The receipts of the Tientsin-Pukow Railway for year 1920 amount to \$15,567,000 of which \$3 million represent net profit. The Chiaotungpu considers this a splendid record and asks the government to award suitable recognition to the Tsinpu administration.

**New Stations on Tientsin-Pukow Railway.**—Four new stations have been established on the Tientsin-Pukow Railway line at Lichar-chong, Char-mung-shan, Shau-bien-cheng and Tan-tse-kai.

**To Train Purchasing Staff.**—The Peking government "Gazette" publishes a ministerial order from the ministry of communications to the Peking-Mukden, Peking-Hankow and other railways instructing the directors to each select one or two experienced foreign-educated officials to send to London, New York and other foreign cities to act as disciples to those engineers and technical experts who are acting as advisers to the ministry for the inspection and examination of railway materials purchased abroad. This idea is to train experts for railway services so that in course of time, foreign goods bought from abroad by the various government-controlled railways can be inspected and received by Chinese engineers without the assistance of foreigners. Special regulations have been promulgated by the ministry governing the purchase and inspection of railway materials purchased from foreign factories. It is the intention of the government to gradually unify and consolidate the purchasing system so that materials purchased by one line can be used by another without difference.

**Consortium Loan Terms?**—A Chinese press report, states that Mr. Yung Kwei, Chinese chargé d'affaires at Washington, D.C., in a communication dispatched to the Peking government, reports that at the latest conference held by the New Banking Syndicate, in New York, the following conditions relative to making loans to China were agreed on: (1) The syndicate to superintend the purposes for which the money is spent; (2) mines and railways to form the security; (3) money to be invested in manufacturing and other industrial purposes and not to be used, in any way for military expenditure; (4) money advanced to be limited to 20,000,000 silver dollars until the Republic is unified.

**Chinghuachen-Pingyangfu Line.**—The *Shun-pao* reports: The Peking syndicate is negotiating with the Peking government about a loan to build a railway from Chinghuachen to Pingyangfu via Tsechow and Changping. This is quite a different line from the Chinghuacheng to Menghsien. The amount of the loan will be decided after estimating the total amount of work and materials. The syndicate has sent the experts to Honan and Shansi to estimate the works.

**New Railroads, Japan.**—The Japanese railway department has given permission for the construction of two private railroads: (1) Shimotsuke Railroad Co., Ltd. and to construct a steam railway between Imaichi-machi and Fujiwara-mura, to Chigi prefecture, a length of 16.65 miles; (2) Onsen Electric Railroad Co., Ltd. to construct an electric railroad between Yamatno-mura and Komatsu-machi, Ishikawa prefecture, a length of 6.08 miles.

**Japanese Railway Revenue, 1920.**—Notwithstanding the business depression that has been felt since May 1920, the Japanese state railway service has not been badly affected, an increase

being seen in the receipts from both passengers and freight. According to an official report, the total number of passengers carried during last year stood at 373,202,414, the receipts therefrom amounting to 203,548,751 yen. The figures show an increase of 58,863,474 in the number of passengers and of 55,032,662 yen in receipts as against the preceding year. The freight carried during the year amounted to 54,468,740 tons, the receipts therefrom reaching 127,609,801 yen. Compared with the preceding year, the receipts indicate an increase of 2,758,067 yen though the amount of freight carried represents a decline of 1,792,237 tons.

**Japan's Railway Jubilee.**—Under the auspices of the department of railways, a jubilee in commemoration of the opening of railways in Japan will be held in Tokyo in the middle of May.

**May Remove Tangshan Station.**—Tangshan station on the Peking-Mukden line, in the vicinity of the Tangshan Colliery, is thought to be unsafe. The railway authorities are considering its removal.

**New S.N. Rolling-Stock.**—The Shanghai-Nanking Railway have purchased 7 locomotives, 80 freight cars and 9 passenger cars from Jardine, Matheson & Co., Ltd., at a total value of more than \$1,130,000.

**Sleepers for Peking-Suiyuan Railway.**—The Peking-Suiyuan Railway has purchased 140,000 sleepers from the Mitsui Bussan Kaisha.

**Obstructing Mr. C. C. Wang.**—The recently elected board of directors of the Chinese Eastern Railway is, according to advices received from Harbin, finding it difficult to function. The railway is again losing money in considerable quantities, due principally to the dullness in business and the Chinese closing of the Manchurian frontier. Only about 250 freight cars a day are being loaded for hauling on the railway, while a minimum of 350 is, according to estimate, necessary to make the railway support its upkeep. Passenger traffic has not, for some years, ranked as a revenue-producer.

Friction between the Russian and Chinese members of the new board is reported to have already developed. Little initiative is shown by any of the members with the exception of China's most experienced railroad man, C. C. Wang. By his endeavors to push things along, he is said, however, to have incurred the displeasure of the other members of the board, both Chinese and foreign.—*China Press*.

## TRAMWAYS

**Peking Tramway Proposal.**—The Peking government has suggested to the French bankers who are providing funds for the construction of the tramway in Peking that the Chinese government will prefer to raise the sum of \$2 million to be partly subscribed by the government and partly by Chinese merchants so as to make a combination of French capital with semi-official Chinese capital.—*Peking Exchange*.

**Woosung-Yangtszepoo Line.**—In connection with the Woosung port development now under way, it is proposed to carry a line of tramways from the Yangtszepoo terminus along the military road to Woosung, and then to the city of Paoshan, returning via Paoshan country to the west of the

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military road, and linking up with the Shanghai tramways on the northern and western boundaries. Mr. Sidney J. Powell is the engineer-in-chief.

## ELECTRIC LIGHTING, POWER, ETC.

**Electric Enterprises in Japan.**—Investigations by the ministry of communications show that, at the end of November last, the number of companies undertaking electric operations throughout Japan stood at 810, with an aggregate capital of 1,272,578,461 yen, the electric power generated by them amounting to 1,361,603 kilowatts. Of this, 1,019,301 kilos are generated by hydraulic power and 342,302 kilos by steam. The following are the details:—

	By Hydraulic power	By Steam
	kilos	kilos
For lighting purposes	894,152	191,935
For operating electric trams	1,068	6,475
For lighting and operating trams	128,081	142,892

**Electric Plant in Ural District.**—A big electric plant has been established in the Verknisetsky factory in the Ural district, which will supply electricity to Ekaterinburg.—*Rosta Agency*.

**New Light Company in Nantungchow.**—The Nantungchow merchants are planning a King Sing Electric Light Co. at a capital of \$25,000, to be divided into 500 shares at \$50 each.

## TELEPHONES, TELEGRAPHS, CABLES, WIRELESS

**Powerful Japanese Wireless Station.**—The wireless station which has just been opened at Tomioka is the most powerful in the Orient. It is at present receiving messages direct from New York and other big stations, and experiments in regard to

sending have been highly successful.—*Celestial Empire*.

**American Wireless for China?**—The Federal Wireless Telegraph Co., of San Francisco, signed, on January 8, a contract to erect a powerful main wireless station at Shanghai, with sub-stations at Canton, Shanghai, Peking and Harbin, at a cost of \$4,200,000. It will be under joint Chino-American operation, and under the sub-control of the ministry of communications, which will cater for official and public business. After ten years the whole system will revert to China. It is understood that this contract has been protested on the ground of alleged infringement of prior British and Japanese contracts.

**Vladivostok-Harbin Wireless.**—Wireless communication will soon be established between Vladivostok, Harbin and Habarovsk. The telegraphic office of the Chinese Eastern Railway has announced that all telegrams for transmission will be accepted by him at ordinary rates and transmitted to their respective destinations without any needless formalities.

**Chinese Wireless Telephones.**—The wireless telephones ordered by the Chinese government from the Marconi Company of London, some time ago, are now being delivered.

**Dutch Cable Works.**—The Netherlands Gutta-percha Company intends to establish a factory at Sourabaya for the manufacture of cables. The company already has a factory at Singapore.

**N. E. I. Cables.**—Telegraphic communications are to be established among the islands of the Dutch East Indies by the government of the Netherlands, which placed an order for from 1,500 to 2,000 nautical miles of cable. The gutta percha used in the manufacture of the cables is a product of the islands. A large German freight boat has been temporarily converted into a cable ship to lay the new lines.

**New Wireless Bureau, Japan.**—The construction of the Haranomachi wireless bureau has just been

completed, and is expected to start working this month. The height of the centre pole is 660-ft. and messages will travel as far as San Francisco easily.

**New Dairen-Antung Telephone Service.**—In recognition of the marked growth of the city of Antung and the desire to establish a telephone connection between Dairen and New Wiju, Seoul, and Fusan, the General Post Office of the Kwantung government has completed a direct telephone line between Dairen and Antung at the cost of about Y.230,000. It is to be opened to public traffic on December 1st. In view of there being a direct Dairen-Changchun line, the telephone network for South Manchuria has thus been brought to a completion. The new line is available also to Port Arthur, Yingkou, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Seupingkai, Changchun, Pen-chihu, etc., and is constructed with 400-lb. wires instead of 300-lb. wires as in an ordinary case. The Chosen government general, on its side, has finished the Seoul-Pingyang section and has now the Pingyang-New Wiju section under construction. The telephone charge is to be like that between Dairen and Changchun, that is, about Y.1.60 per message.—*The World's Salesman*.

## PUBLIC WORKS

**Reclamation Works, Japan.**—Extensive reclamation works at Inohana lake, Shiznoka prefecture, are to be commenced in April or May. The expense is estimated at Y. 2,500,000.

**"Dr. Sun's" Park.**—The *Shunpao* says it is decided to lay out Kwanyinshan as a park and it will be called Chungshan Park by using the pseudonym of Dr. Sun Yat-sen to commemorate him.

## PORT WORKS, HARBORS AND DOCKS

**The Proposed Hulutao Harbor.**—With regard to the construction of the Hulutao harbor works,

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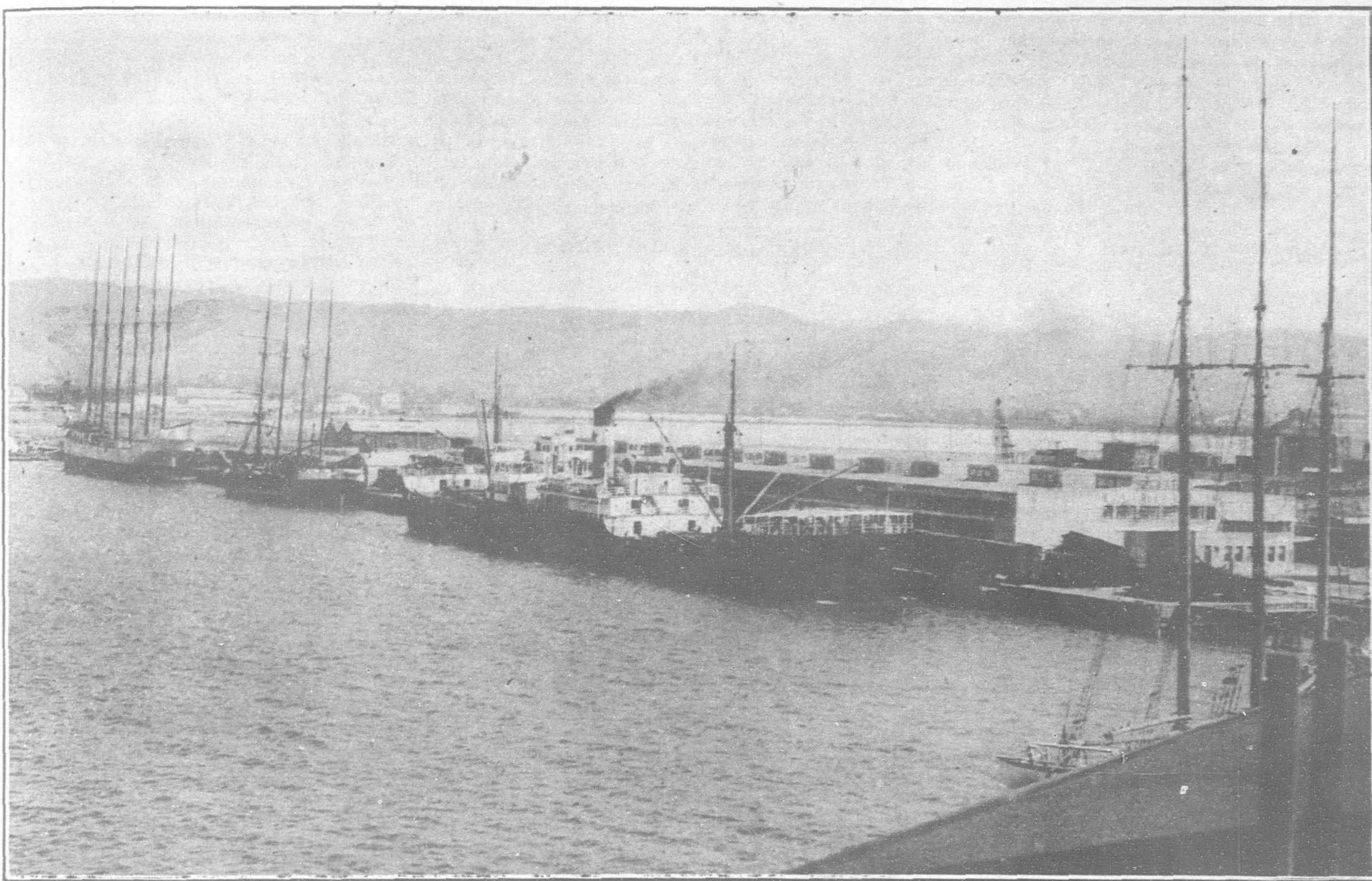
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some influential Chinese commercial interests in Manchuria have petitioned General Chang Tso-lin asking whether they be permitted to raise funds for the purpose on behalf of the Chinese government because it has been decided not to use foreign money. The idea of the Chinese merchants is to build an up-to-date harbor and other works in Hulutao for competing with Dairen and Yingkow in the exportation of Manchurian products; but General Chang has referred them to the Peking authorities. The construction cost is estimated at \$8,200,000. It was proposed to have this capital subscribed in equal shares between the government and the merchants. The scheme is shelved for the present because neither the merchants nor the government can raise the funds.

**Woosung Port Development.**—The Woosung commercial port bureau, with head offices at Woosung and a branch office in Shanghai, will be formally opened on February 12. The promoters, a strong Chinese syndicate, have appointed Mr. H. von Heidenstam, the chief engineer of the Whangpoo conservancy board, adviser to the new bureau, and Mr. Sydney J. Powell, engineer-in-chief. Among other important undertakings, the syndicate has in view the construction of a line of tramways.

**Chefoo Harbor.**—The improvement of Chefoo harbor has been continued throughout 1920. Work on the breakwater has not been completed, and a total length of 1,700-ft. of parapet wall has been built. Work on the mole is going on steadily.

**New General Post Office and Hospital for Singapore.**—The Singapore government plan to commence work within the next few months on the buildings of the new general post office and new general hospital.

**Repairs to the Grand Canal.**—The Chinese government has organized a bureau to take charge of the repairs to the Grand Canal, which has become congested with mud and débris. Plans of the work were discussed and decided upon at the general meeting of this bureau in December. The amount required for the first year's work will be \$918,000, for which the plans have already been signed. The bureau has in hand a sum of \$425,000, and the deficit is to be secured by levying a surcharge of 20 per cent. on goods passing through the native customs in Kiangsu province.

**New Floating Dock for Sourabaya.**—A message from Rotterdam states that tugs have left that port towing a floating dock bound for Sourabaya. The dock is 94 metres long and 23 metres broad.

**Large Dock for Pootung.**—It is reported that a recently-established engineering firm in Shanghai intend to erect a large dock at Pootung in the near future.

**Experts Invited for Shanghai Port Conference.**—The Whangpoo conservancy has decided to request the countries which are members of the consultative board—viz., Great Britain, America, France, Japan and the Netherlands—to nominate a consulting engineer, who is a specialist in harbor and river work, to attend a conference at Shanghai on October 15 on the question of developing the port of Shanghai, (1) on the basis of the approaches and draught limit remaining as at present, and (2) for the probable maximum draught of Pacific ships.—*Reuter*.

**Two Delegates Visit America.**—The Nantung-chow conservancy board and the Grand Canal conservancy board, Kiangsu, have each sent a delegate to America to investigate engineering works in connection with the work of the boards. The former board is represented by Mr. Sung Tah-an, and the latter by Mr. Sen Pao-duen.

## BRIDGES

**Tokio to Build Thousand Bridges.**—The Municipal authorities of Tokio have decided to carry out the reconstruction of 1,000 bridges in the city during 1921. 300 are wooden bridges and will be replaced by modern iron-framed bridges. The total expenditure will be Y.1,400,000.

**The Suez Canal Bridge.**—The bridge traversing the Suez Canal which was erected during the war will shortly be demolished, and will be replaced by a tunnel.—*Reuter*.

## WATERWORKS

**Singapore Waterworks to be Improved.**—The Singapore municipality are to spend \$21,500,000 on the improvement of the water supply of that city by constructing new pumping stations, reservoirs and extra mains. It is estimated that the work will cover a period of seven years.

## BUILDINGS

**Up-to-date Hospital, Straits Settlements.**—An up-to-date hospital is to be erected in the Straits Settlements somewhere at the junction of Bukit China and Lorong Panjang. A laboratory on modern lines will be attached to it and the government pathologist will be stationed in Malacca.

**New Hospitals for Chita.**—An hospital for invalids is to be erected at Chita, also a home for aged people.

**Commercial and Industrial Hall, Japan.**—The construction of the commercial and industrial en-

couragement hall at Tokio, is half completed. The cost is estimated at Yen 1,000,000. The chemical hall is expected to be completed in March, and the sample, engineering and industrial halls are to be completed in November. The formal opening will take place some time in November.

**Tenement House, Japan.**—The social department has decided to construct a three-storied iron concrete building, as tenement house for laborers. The building is to cost Y. 150,000.

**Two New Schools, Tokyo.**—The plans have been passed for the construction of two middle schools, Tokyo, at a cost of Y. 600,000 each.

**Industrial School and Hostel for Hindu Widows.**—Bahadur Lala Ganga Ram, a wealthy resident of Lahore, has offered in trust to the Punjab government, property at Lahore, for the establishment of a normal and industrial school and hostel for Hindu widows, and a first-class secondary school for girls. The hostel is planned to accommodate 80 boarders at the outset. The Punjab government has gratefully accepted the offer.

**French Commercial School in Shanghai.**—A commercial school is to be established at Shanghai under the joint direction of the French and Chinese governments. The French government will contribute £3,000 towards the cost of erection, and the two governments have undertaken to share the running expenses, which are calculated at £13,000 per annum.

**Japanese University for Shanghai.**—Japanese in Shanghai are contemplating the construction of a university for Chinese under the directorship of Dr. Ariga, one-time legal adviser to the republic.

**National Shrine, Japan.**—It has been decided to construct the Yamato-no-Hime shrine at Yamada city. An engineer has been appointed by the government to investigate. The shrine is to occupy an area of 30,000 *tsubo*.

## MACHINERY

**Machinery for Takashima Coal Mine, Nagasaki.**—The Mitsubishi Mining Co. plans to burn power coal at the Takashima coal mine, Nagasaki, at the rate of about 200 tons per day. Machinery for this purpose has been ordered from the United States.

## MINES, MINERALS AND METALS

**Anglo-Chinese Mining, Sinkiang.**—The tuchun of Sinkiang, General Yang Tseng-hsin, has telegraphed that the local gentry intended to inau-

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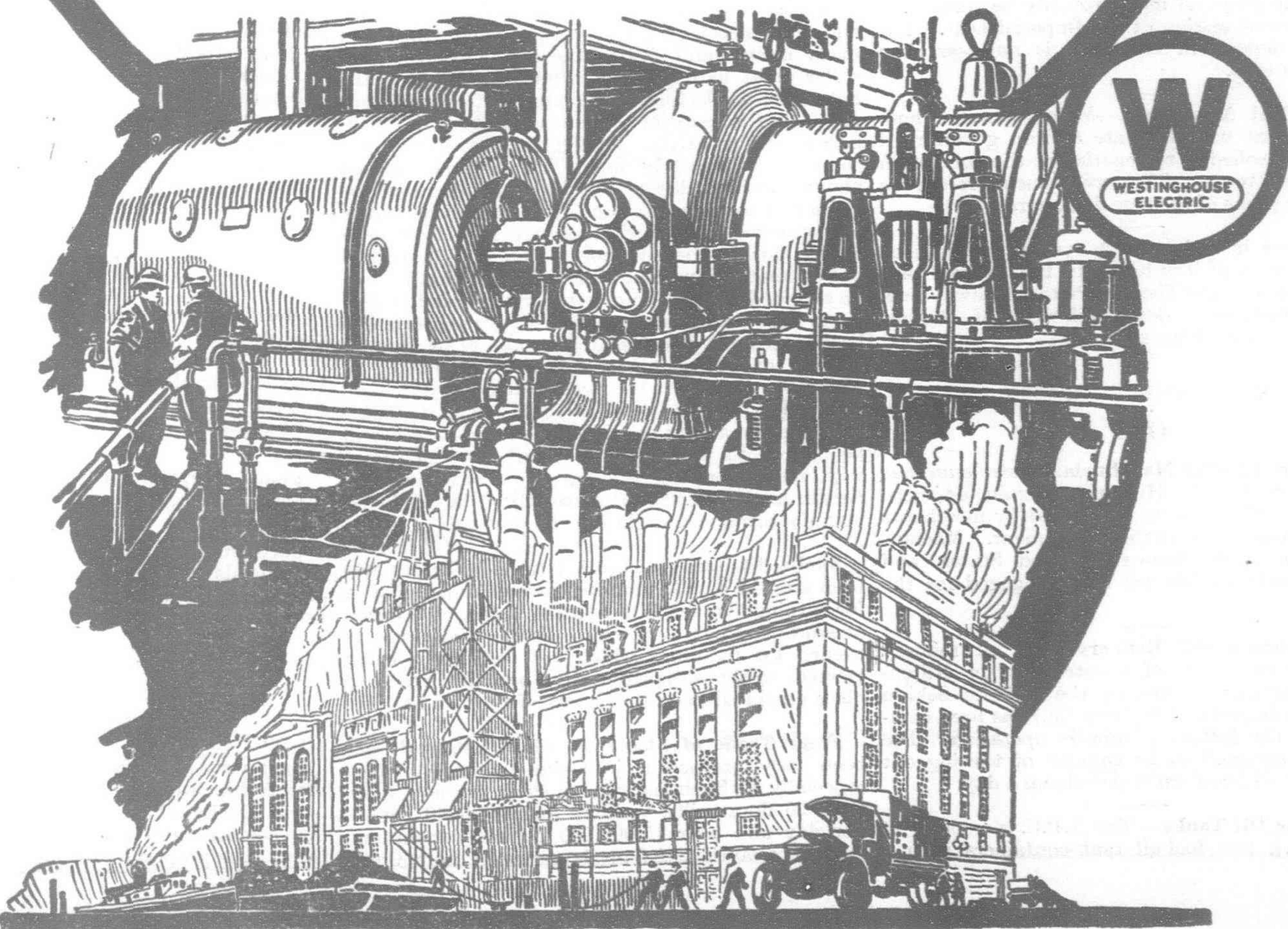
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gurate an Anglo-Chinese Mining Syndicate to operate the oil fields in that province.

**Mining in Shansi.**—During the course of the last few weeks, vernacular papers in Peking and Tientsin printed alarming reports charging General Yen Hsi-shan, military governor and concurrent civil governor of Shansi for the alleged sale of valuable mining concessions to certain British and American merchants for his self-enrichment, etc. Now governor Yen has sent an official despatch to the ministry of agriculture and commerce reporting the signing of a draft agreement with the Peking syndicate for working the coal and iron mines in Tatung and other districts within that prefecture by joint Chinese and British capital and administration. According to the despatch, the idea of Sino-British co-operation for the development of the valuable mines in Tatung prefecture of Shansi was first brought to the notice of the native gentry and the chamber of commerce of Tatung and not suggested by the governor so that in accordance with the retrocession agreement with the Peking syndicate signed in the year of 1898 when the said British company restored its mining rights to the people of Shansi by the payment of one million and half dollars in specie, the "Fu-kung-ssu" was invited to co-operate with the natives this time without payment of any commission or any loans to Shansi at all. The whole business is strictly commercial and there is nothing underneath the table. Previous to its presentation to the ministry of agriculture and commerce for final approval by the civil governor, the draft agreement was duly sent to the provincial assembly in Taiyuan for concurrence.

**New Mining Company.**—A mining company under Chinese management and control, with a capital of \$10,000, was formed by some Chinese merchants in Tachienlu, Szechuan, to operate a mica mine near Tanpashun, north of Tachienlu. Two hundred shares of \$50 each have been issued and subscribed and the company is planning to connect with foreign firms either in Shanghai or in Chunking

## COAL

**Coal Mines in Kabafuto.**—The government of Kabafuto (Saghalien) has proposed to the board of colonies in Tokio to establish a semi-official company under the style of Kabafuto Kogyo Kai-sha (Kabafuto Mining Company) with a capital of Y. 80,000,000, to operate coal mines in that island. The proposal may probably be placed before the present session of the Imperial Diet. The total coal deposit in Kabafuto is not less than 500,000,000 tons.

**Cassel Coal Agreement.**—Major Cassel, whose coal agreement with the late Canton government has been cancelled, is re-negotiating the concession on modified terms. The government refuse to disclose the terms of the new draft agreement.

**New Mines in Anhwei.**—A coal mine has been discovered west of Tzu-hsien, in the Anhwei province, situated on the Tientsin Pukow Railway line, about thirty-three miles north-west of Pukow. The metal is close to the surface.

## OIL

**Petroleum Find in Manchuria.**—Petroleum has been discovered in the Hinsun mountain, northern Manchuria. The oil is to be worked by merchants under the supervision of the government. Machinery is being ordered from the United States, and American technologists are being engaged for the work.

**New Japanese Oil Refinery.**—An oil refinery which was in course of construction in Niitsumachi, Niigata prefecture, by the Teikoku Sekiyu Kaisha (the Imperial Petroleum Co.) has been completed and the factory is now in operation. The refinery is reported to be capable of turning out from 1,200 to 1,500 *koku* of petroleum a day.

**Philippine Oil Tanks.**—The A.P.C. is erecting at Cebu (P. I.), two fuel-oil tank-containers with a

capacity of about 1,500 tons each, and a large petroleum dépôt at the port. They are situated on a reef at the south entrance to the harbor, and are expected to be completed in April, 1921.

**New Oil Mill to be Established in Chungming.**—The erection of an oil mill in Chungming, capital of \$100,000, conducted on modern methods, is being planned by Mr. Sung and other local merchants. Chungming is an island lying right at the mouth of the Yangtze, and the oil is to be made chiefly by pressing the seeds of cotton and beans. The machinery for producing bean-oil has been bought locally, and that for cotton-oil is to be ordered from abroad.

**Oil Fields in Chinese Turkestan.**—Yang Tseng-hsin, the tuchun of the new dominion, wired to the Peking government on the 3rd January that as Kwan Pao-chin, a Chinese merchant of that province, and a British firm have concluded an agreement to establish a company to operate oil fields in the new dominion as a joint enterprise, the board of political affairs of that province will send an official to Peking with the draft agreement to confer with the Peking government about it fully.

## INDUSTRIES

**Modern Ice Making and Cold Storage Scheme for Kobe.**—A scheme is under way for the erection of a modern ice making and cold storage plant in Kobe to be located on the bay front between Kobe and Osaka.

The plant will be of American type used in France by the American Expeditionary Force, having a daily capacity of 300 tons of ice and 1,000 cubic tons of cold storage space.

The installation and operation of the plant will be supervised by Japanese engineers, with the manufacturer's engineer as adviser. Two Japanese engineers are now abroad studying foreign cold-storage methods.

Ice will be supplied to Osaka, Kobe and the intermediate towns. Three tugs of special design have been contracted for to carry ice to Kobe and Osaka. Auto trucks will be used to receive the ice from the tugs and distribute it to retail depots and large consumers. The receptacles used in transporting the ice by tug and auto are the same.

Cranes erected at Kobe and Osaka will lift these receptacles containing two tons of ice from a tug to a truck. The promoters believe that a modern company for supplying ice at reasonable prices and in a convenient way will be financially profitable and serve a social purpose as there is no doubt that many infants and sick people of the poorest class suffer great hardship and often death during the hot season for lack of this commodity. Exorbitant prices and inaccessible supplies handicap the business as it now exists. To overcome these the new company will, in addition to the method outlined above, establish depots at suitable points in all the cities and towns served and from these small carts will traverse all the principal streets at least once a day during the summer season. Well worked out estimates have established the fact that ice can be supplied at prices more than 50 per cent. below those now prevailing and still allow a reasonable profit, reserve, depreciation, etc. The capitalization of the company will be Y.2,000,000, of which three-quarters has been provided by British, American and Japanese interests. It is probable that the remaining one-quarter of the shares will be offered to the public in small denominations, with restrictions on the amount which any one person may hold. The plant will be finished and manufacturing begun during the first half of 1921.

**Shells Utilized in Lime Kiln.**—A factory has been started in Nantungchow, China's model city, for turning the shells of oysters, clams, etc., which abound in that city, into lime. Limestone is needed for buildings which are constantly being erected, so the authorities have been petitioned to place an embargo on the export of such shells.

**Flour Trade of Shanghai.**—The flour trade has been very prosperous in China in recent years, especially at Shanghai, where there are now more than 20 flour mills, yielding about 46,000 parcels per day and over 17,000,000 parcels per annum. A large quantity of flour is exported from China

every week to England, America and Japan. The total amount exported last year from Shanghai is valued at over \$11,000,000.

**A Provincial Exhibition to be Held at Nanking.**—An exhibition for promoting and improving industrial enterprises is to be held at Nanking on March 1.

**Lacquer-Ware Industry.**—According to a report by the ministry of agriculture and commerce, at the end of 1919, the total number of factories carrying on the manufacture of lacquer-ware throughout Japan reached 7,789 with 22,835 employees therein, and the value of lacquer-ware turned out during the year mentioned amounted to 24,150,237 yen. Compared with the preceding year the number of factories indicates an increase of 373 and that of employees 167, while the wares manufactured also show a gain of 7,959,492 yen or 49 per cent. To go into further particulars, the value of household furniture and fancy goods turned out totalled 9,298,371 yen, an increase of 2,056,213 yen as against the preceding year, that of table ware amounted to 9,144,254 yen, an increase of 3,004,696 yen, and that of other wares amounted to 5,706,612 yen, also showing a gain of 2,898,583 yen or 103 per cent. The increase is principally accounted for by the abnormal rise in the market price, but there is no denying that the demand is steadily on the increase.

**Foreign Business Firms in China.**—The number of foreign firms doing business in China, according to the Chinese ministry of commerce, is as follows:—

No. of business firms	Nationality
2	Germany
4	Sweden
5	Austria
8	Spain
12	Norway
19	Italy
20	Belgium
25	Holland
27	Denmark
93	Portugal
171	France
314	U. S. A.
644	Great Britain
1,760	Russia
4,878	Japan
33	other nations

**Pacific Commercial Co., will Note.**—Mr. Hsu Shi-yin, formerly acting civil governor of Fukien, and some other prominent personages have formed a joint stock company, known as the "Pacific Commercial Company," to carry on trade with different foreign countries. The application for the registration of the company has been duly granted by the ministry of agriculture and commerce.—*Chinese Report*.

## FISHERIES

**Refrigerating Trawler for Bombay.**—To give the Bombay market a more adequate supply of fish, a trawler is being secured, equipped with a refrigerating plant, so that it can remain at sea for several days and still bring fish to harbor in a fresh state.

**Fishery, Japan.**—Usually there is very little fishing done in the Japan Sea during the winter, but this winter things are more hopeful, and the departments of agriculture and commerce is sending 20 officials under engineer Shimoda, through the Japan Sea to north Karafuto sea, to investigate fishing conditions.

## AIRCRAFT

**Japanese Airplane Mothership.**—The airplane mothership, which will be launched at the Yokohama Dockyard in June, will have 10,000 tons displacement and will carry 24 airplanes and 550 men. The proposal to engage British naval airmen

as instructors has had to be dropped owing to the British authorities not being able to spare the men, but the navy office is considering the engagement of British civilian instructors in their stead.

**Airdromes, Japan.**—In the coming fiscal year, new aerodromes will be established at the Kure and Maizuru naval ports, in addition to those at Yokosuka and Sasebo. It is proposed to increase the naval air corps to 15 during the next three years, and the training of airmen and other preparations are under contemplation.

**Kyushu-Shanghai Flight.**—The Imperial Aviation Association has decided to carry out a non-stop aerial flight between Kyushu and Shanghai November next. Prior to this, the association will carry out an aviation contest at Susaki about the middle of May.

**Big Airplane for Nippon.**—A big airplane is to be constructed by the Japanese navy department at Yokosuka at a cost of Y.90,000, 20 British airplane builders doing the supervisory work, according to a report in the Japanese papers. The rights to manufacture the F.-5 type is reported to have been secured from the British government by Japan. One report states that a 900-H.P. engine is to be installed in the machine. Most of the materials for construction are being brought from England.

**Reported Chinese Seaplane Contract.**—A loan of £400,000 has been secured from a British firm who has concluded a contract with the government for £897,200 for the supply of 105 seaplanes, ready for delivery before end of June next. In payment for the loan and for the contract, the government will issue treasury bonds on the basis of 100 for 92. The contract price also includes the cost for the construction of seaplane depots at Makiang, Kiang-yin, Chefoo and Taku. The loan, it is reported, has been paid over to the ministry of navy.—*Chinese Exchange*.

**Japan Buys French Planes.**—The Japanese authorities have decided, according to the *Yama-to*, to order from France five large aeroplanes, at

a cost of Y.60,000 each. It is further reported that French instructors will be invited to visit Japan early in April to train Japanese officers in the art of controlling these large aeroplanes.

**Planes from Germany.**—Seventeen German airplanes allotted to Japan were brought by the N.Y.K. *s.s. Tsuruga Maru*, which arrived at Kobe on January 17.

**Tokyo Main Road.**—The Tokyo reconstruction section of the home department plans to build a main roadway from the eastern side of Tokyo station as far as Kamejima bridge. The road, according to present plans, is to be 168 feet wide and some 2,784 feet long, something over half a mile. The cost is to be Y.5,300,000, including the expense involved in the purchase of property.

**Chapei-Taichong Road.**—A road for motor-cars is shortly to be started between Chapei and Taichong. Should it prove successful, the promoters will make further extensions. The initial estimate is \$200,000.

**New Automobile Road.**—The automobile road between Tse-ning and Sechien, two cities in northern Kiangsu about 58 miles south-west of the intersecting point of the Tientsin-Pukow and the Lunghai Railways, was opened to traffic on January 16.

## MOTORS

**No Sound Motor.**—Messrs. Sale & Frazer of Tokyo, have purchased the rights of the no sound motor for Yen 1,000,000. This motor has been recently invented by a Russian, and should be ideal for aeroplanes.

**Cars in North China.**—There are about 600 motors in Tientsin, China, this year as against 400 last year. A truck line is being established from Peking to Tungchow and from Tungchow about a third of a mile to the Western hills. Other lines

are being established from Chinhaishin and from Techow to the interior of Chihli province.

**Automobile Communication Between Ito and Atami, Japan.**—Some business men of Nuinazumachi are forming a limited company to open automobile communication between Ito and Atami, a distance of 12 miles.

**Canton Motor Opportunity.**—There will be a motor road from the North Gate of Canton to the district of Tsungfa, some 159 miles, if the proposal of an interested party to run a motor-car service is realized.

**Heilungkiang Motor Ban.**—The Heilungkiang provincial authorities refuse to permit the French to operate any motor car services between Tsitsihar and Heilungkiang, on the ground that the motor roads built in that province were at the expenses of the Heilungkiang provincial government and therefore could not be utilized for purposes other than postal services carried on by local authorities.

## GOVERNMENT FINANCE

**China's Financial Condition before the New Year.**—As announced by the ministry of finance the Chinese government must pay before Chinese New Year \$13,100,000 for the repayment of principal and interest on different loans due on Chinese New Year's eve (February 7), more than \$9,700,000 to troops and \$4,500,000 for political expenses out of the revenue from five newly contracted loans to an amount of \$24,200,000 and the revenue derived from national taxes handed in from various provinces to an amount of more than \$4,000,000.—*Shun Pao*.

**Chinese Bankers' Petition.**—The national federation of banking corporations has petitioned the government to carry out the three resolutions passed at the general meeting of the federation, as the best solution of the present financial trouble. They are as follows: (1) A definite measure should

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be taken as soon as possible for the disbandment of troops of the different provinces within a prescribed length of time; (2) domestic loans should be readjusted. Discredited loan bonds of the 1st and 8th year of the Republic should not be floated any more; (3) the currency system should be consolidated. Bank notes in circulation should be supervised and a system formed regarding their issuance. Regulations governing the minting of silver coins should be drawn up at once, and the minting of copper coins stopped.—*Sin Wan Pao*.

**Maritime Customs Revenue for 1920.**—The revenue from the maritime customs for 1920, amounted to Hk. Tls. 49,500,000, an increase of Tls. 3,500,000 over 1919. The collections for the principal ports are:—

	HK. Tls.	HK. Tls.
Harbin	933,200	933,200
Harbin	933,200	a decrease of
Antung	1,130,500	"
Dairen	4,902,700	an increase of
Tientsin and Chinwangtao	5,496,100	a decrease of
Kiaochow	1,607,500	"
Hankow	3,671,000	"
Shanghai	18,833,000	an increase of
Swatow	1,109,900	"
Canton	2,542,300	"

	HK. Tls.
—	—
36,500	214,700
345,800	69,700
59,200	548,500
4,543,300	60,200
70,400	70,400

All foreign and indemnity obligations secured on the customs revenue, including the service of the reorganization loan, have been fully met and a sum of Sh. Tls. 23,150,000 has been handed over to the Chinese government.

**Terms of Famine Loan.**—The terms of the \$4 million famine loan which, after protracted negotiations, was signed on January 19, are as follows:—  
(1) The amount of the loan will be for \$4 million, Chinese currency; (2) interest will be paid on the basis of 8 per cent. per annum; (3) the loan funds will be paid on the basis of 995 for 1,000; (4) security for the loan will be in the form of the surtax charged by the Customs and any deficit will be made good by an appropriation from the Customs surplus; (5) the uses of the loan will be exclusively confined to the relief of the famine in China; (6) repayment of the loan will be effected within one year approximately; (7) the loan of \$4 million will be furnished in four equal shares of \$1 million each by the Yokohama Specie Bank, the Hongkong and Shanghai Banking Corporation, the Banque de l'Indo-Chine and the International Banking Corporation; (8) interest will be paid together with the payment of the final instalment of the principal; (9) the disbursement of the funds will be subject to the approval of the supervising committee; (10) the surtax collected by the Customs will be deposited monthly by the commis-

sioner of Customs of Shanghai according to the stipulated proportions in the four creditor banks.

**China's Salt Revenue.**—The revenue from the salt gabelle for 1920 is reported to have amounted to \$90,000,000 or about a 10 per cent. increase over that of the previous year.

**Canton Asked Bank of Formosa for Loan?**—The Canton military government made overtures to the Bank of Formosa toward the close of the year asking for a Y.1,000,000 loan. The government is suffering from financial difficulties and it is thought the loan is intended to defray expenses. The bank hesitated to comply with the request, fearing, if furnished, it might be considered a political loan and provoke criticism as such in certain sections. In consequence the Chinese chamber of commerce in Canton proposed to undertake the task of arranging the matter with the Japanese bank, with the result that the required amount will be advanced in the form of an industrial loan. The contract has been concluded and the money will be turned over to the chamber of commerce in a short time.—*Japan Times*.

**Japan's Specie Holdings.**—Japan's specie holdings on December 15 broke the latest record, the total reaching 2,117 million yen, an increase of 28 million yen as compared with the end of November. The particulars are as follows:—

Comparison with	
December	November
15	30
(In millions)	
Held by Government ...	884
Held by Bank of Japan ...	1,233
Retained at Home ...	1,051
Retained abroad ...	1,066
	— 4
	+32
	+33
	— 5

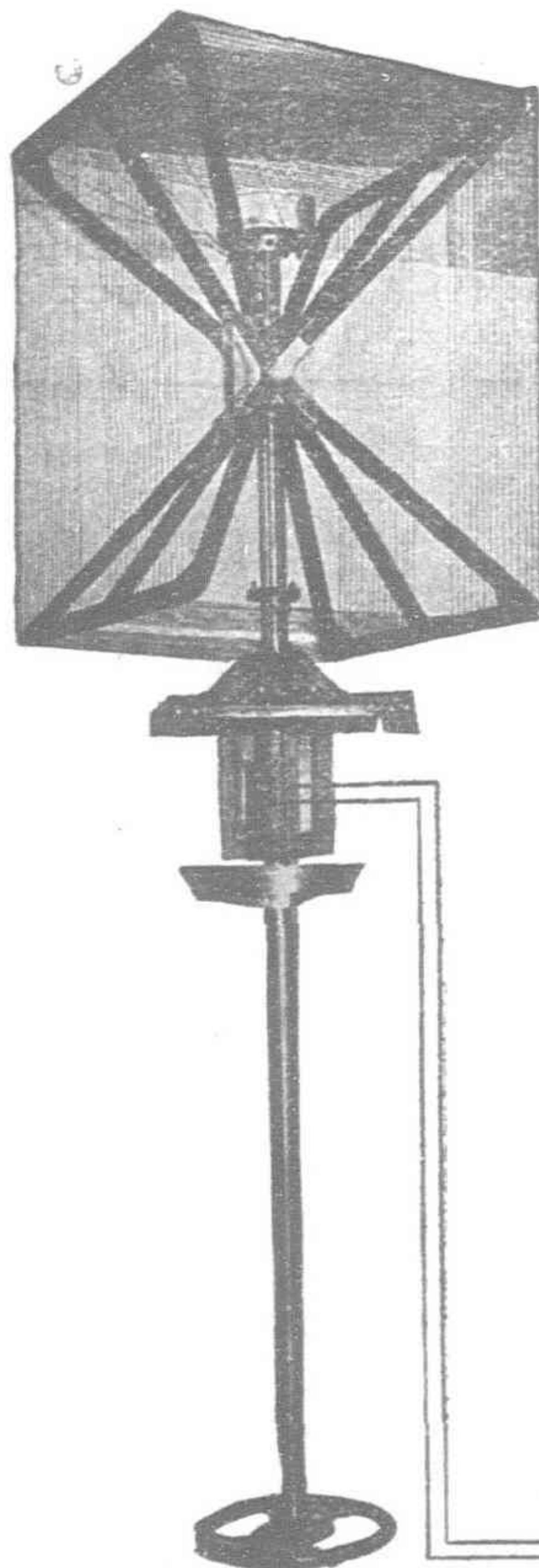
**New Bank for Shanghai.**—The Equitable Eastern Banking Corporation has opened temporary offices at No. 1 Kiukiang Road. Upon completion of the new Robert Dollar Company's building in Canton Road, the bank will move into a handsome suite of offices on the ground floor of the new building. This bank is designed to facilitate and develop far eastern business now being done by the Equitable Trust Co. of New York. It has a capital of \$2,000,000, with a surplus of \$500,000.

**Amalgamation of Banks, Japan.**—Three large banks in Toyama city, Japan, are to be amalgamated in the near future. The amalgamation will take the form of a newly-established bank with a capital of Y.2,000,000.

**New Chinese Bank.**—A new Chinese bank (the Chung Nan) is shortly to be opened in Shanghai. The capital, about \$20,000,000, will come from overseas Chinese. The bank will be situated at the corner of Hankow and Szechuen Roads, and will be formally opened some time in April.

**New Sino-French Bank.**—With the co-operation of certain large French interests, the Chinese financiers and capitalists, Chu Pao-san, Shen Lien-fang and several others have now organized a Sino-French banking corporation in the French Concession of Shanghai with a capital of ten million dollars. It is reported that this new Sino-French banking corporation has signed an agreement with the ministry of finance for a loan of three million dollars to tide over the financial difficulties of the Peking Government.—*Exchange*.

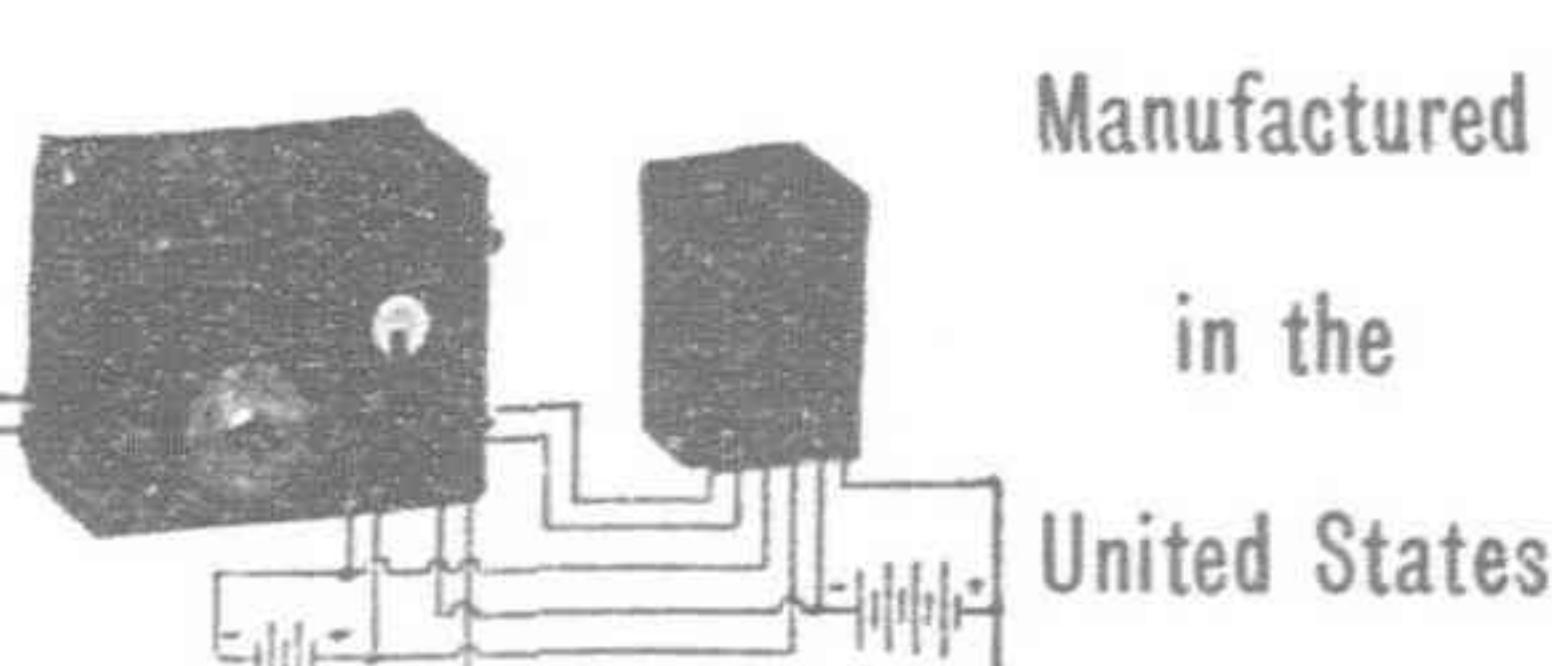
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